Leapfrogging an IT Labor Force: Multinational and Indigenous Perspectives

Throughout the world countries recognizing the economic benefits of IT are rapidly developing information sectors. Advanced industrialized nations have been moving gradually from industrial to post-industrial work while newly industrializing nations are leapfrogging directly from agrarian to information-intensive work. At the close of the twentieth century some interesting tensions result from these two types of nations moving in the same direction. An important issue for both advanced industrialized countries and newly industrializing nations is the human resource issue. Managers at multinational firms as well as policy makers in newly industrializing countries recognize the need for developing qualified IT personnel. The Irish IT sector provides a valuable setting for studying human resource issues associated with the rapid development of an information sector because it affords the opportunity to explore both the multinational and the indigenous viewpoints. Two key human resource issues for the global IT sector are explored in this paper: ensuring a supply of qualified IT workers in the host country and managing IT workers in a cross-cultural work environment. This paper is based upon an ethnographic study of the information sector in Ireland. The issues that are raised represent the experiences of American and Irish managers, Irish policy makers and Irish IT workers.

As the global economy moves further into the post-industrial era, nations around the world see opportunities for economic development in the information sector of their economies. Advanced industrialized nations have been moving gradually from industrial to post-industrial work over the past several decades and have spawned the multinational IT companies which have enabled the development of a global information sector. Newly industrializing countries, on the other hand, have been leapfrogging in recent years directly from agrarian to information-intensive work. At the close of the twentieth century, some interesting tensions are resulting from both economies moving in the same direction. A critical consideration in the development of a global information sector is the human resource issue: the development and management of appropriately qualified information technology (IT) workers. These are the individuals who fuel the information economy by producing the computers, developing the software and providing the information services that keep it running.'

Ireland provides a valuable context for examining IT human resource issues in the information sector for several reasons. Because it developed its information sector through inward investment by multinational firms, the case of Ireland includes two different points of view: 1) that of multinational IT illIDS from advanced industrialized nations; and 2) that of 'second wave' countries typically, newly industrializing countries. Second wave IT countries such as Ireland are those which are taking an alternate path into the information economy by rapidly moving directly from an agrarian or partially developed industrial economy into an information economy. They have been doing this in the last few decades of the twentieth century. They stand in contrast to 'first wave'

countries - typically advanced industrialized nations - which have been moving into the information economy after a gradual transition from an agrarian through an industrial to a post-industrial economy. In addition, since Ireland has been actively engaged in developing its information sector for thirty years, there is ample opportunity to critically analyze the experiences of policy makers, Irish workers and managers, and multinational managers in order to offer some useful lessons applicable to other contexts.

This paper addresses some issues encountered by Irish and American IT professionals in the development of an Irish IT work force in conjunction with an economic development policy of inward investment by multinational IT firms. Specifically, this paper addresses two important sets of human resource issues. The first set relates to ensuring a supply of appropriately qualified IT workers. These issues range from educational policy to creating a national climate and infrastructure supportive of IT work. The second set of human resource issues relates to managing IT workers in a cross-cultural environment. This culturally diverse work environment has resulted from the infusion of multinational IT firms reflecting a variety of national cultures. To the extent that Ireland's experiences are typical of other second wave countries, the lessons learned are extensible to indigenous and multinational managers as well as government policy makers in other countries. As the title of this paper suggests, the lessons apply not just to the host country but to multinational IT management as well.

This paper is situated at the intersection of two important streams of global IT research. One of these streams is producing a body of literature consisting of country-level studies that examine the interaction between IT development, diffusion and use, and societal context.' This paper contributes to this body of literature by provided primary-source information about socio-cultural factors in the Irish context and how they are influencing the human resource dimension of IT. The other stream of relevant research is concerned with IT and its role both in developing countries and in economic development. Attention in this body of literature is also given to cross-cultural issues deriving from the interactions between transnational corporations and their foreign subsidiaries.' This paper contributes to this body of literature by highlighting the human resource and management issues that arise in a nation desirous of using IT employment for economic advancement.

Methodology

This paper is part of an ethnographic study of Ireland's IT sector. The overall objective of this research project was to conduct an interpretive investigation of the interaction between societal context and the evolution of the primary information sector in Ireland. The general research model used in framing this project is shown in Figure 1.[4]

The primary sources of data for this paper are participant observation and sew-structured interviews conducted at 14 multinational and indigenous IT firms in the hardware, software and information services industries in Ireland. This information is supplemented with public policy documents and interviews with policy makers and cultural observers. Participating firms and the number of participants at each are shown in Table 1.[5] Interviews of one and one-half to two hours in typical duration were conducted with Irish and American IT workers and managers representative of the spectrum of IT work from component assemblers to software engineers to managing directors." Topics covered in the interviews are presented in the Appendix. While these items served as a general guide, the interviews were not restricted to these topics.

Transcripts of the interviews were analyzed using open coding (Strauss, 1987), and a database of respondent characteristics and comments was created to facilitate "retrieval and systematic analysis of the data. An in-depth discussion of the methodology can be found in Trauth (1997) and Trauth & O'Connor (1991). The human resource issues that surfaced from this single country case have implications well beyond
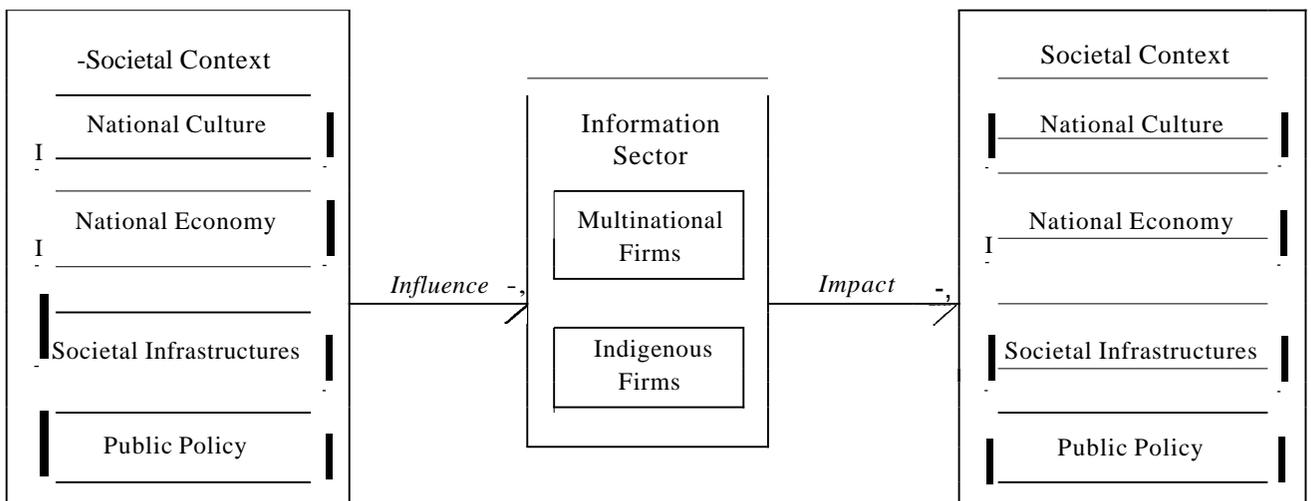
Figure 1. Influence-Impact Model of Society-Technology Interaction

the Irish shores.

This study was conducted during the period 1989 to 1995 with the bulk of the data collection occurring between September 1989 and August 1990. During that time, I was a Fulbright Scholar living and teaching in Ireland. It was during this time that I conducted the interviews at the IT firms. My posture in this research project was that of an ethnographer from one culture (United States) going to another (Ireland) to learn about a specific facet of it (the information technology sector). During the period of 1991-1995, I spent shorter periods in Ireland collecting documentary information and conducting selected interviews with informants in the TI" sector and in government agencies.

Background: Developing the Irish IT Sector'

Ireland took its first tentative steps to create an information sector in the 1960's, when it began to invite multinational fmns to the country and to educate its population to work in them. These were blind steps, as well, in that policy makers were not consciously attempting to create an information sector. Rather, they were attempting to replace dwindling agrarian employment with industrial work. This policy of economic development through inward investment was a direct reversal of the economic policy that had been in place since Ireland achieved its independence from Britain in 1922. In the early years of this country leaders, had endeavored to replace the colonial society with cultural and political sovereignty achieved largely through economic isolationism.

When 'the wisdom of that approach began to falter, Ireland's search for alternatives led it to industrialization-by-invitation: the attempt to rapidly develop an industrial sector by importing both expertise and jobs. In searching for suitable industrial sectors from which to invite multinational firms, Ireland settled upon three: pharmaceuticals, chemicals and electronics. It was from this initial recognition of the economic potential of the electronics sector that the country eventually established its separate information sector.

The expectation of the policy makers who promoted this plan was that multinational firms would bring to Ireland both direct and indirect benefits. Direct and short-term benefits would be the jobs that would keep people in Ireland and off the dole." The anticipated indirect benefit was that foreign investment would provide not only jobs but also a new

business climate. It was hoped that these outside influences would help Ireland to more quickly develop an indigenous entrepreneurial capacity. Thus, the long-term benefits would be the spillover effects of the rapid development of technical and business expertise.

The nascent information sector began with firms such as Digital Equipment Corporation, Apple, Amdahl, Analog Devices and Wang which brought employment in computer hardware manufacture when they came to Ireland in the 1970's and early 1980's. The improvements made in the physical and societal infrastructures during the 1980's encouraged these early firms and new ones to consider additional types of work that could be done in Ireland. It was these additional types of work - software development and information processing - which resulted in the recognition of a distinct information sector in Ireland (National Software Directorate, 1992; *Overseas Industry in Ireland,* 1991; Power, 1992). By the 1990s, the information sector was a robust and diversified sector providing employment in hardware manufacture and final assembly, software development and localizing,? and information processing and services.to

Irish policy makers provided attractive economic incentives for inward investment." These were the necessary conditions for establishing the multinational IT sector in Ireland. But as I learned from both observation and discussions with American informants, the sufficient conditions were an infrastructure supportive of the type of work to be done and a qualified labor force to do it. Multinational firms in the computer industry came to Ireland because they wanted a foothold in Europe and because Ireland provided the most competitive economic incentives. However, once they arrived they found a national infrastructure being developed to keep them there. The crucial ingredient in this mix was the labor force. The young, English speaking, and well-educated workers are one of the main reasons firms that have come to Ireland remain there. By the early 1990s, the quality of the education possessed by the labor force had risen to become a primary selling point of Ireland.

If the reasons for coming to Ireland have to do with financial incentives, the reasons that firms have stayed in Ireland have to do with the culture and society which produces these IT workers. The challenges of ensuring a supply of qualified IT workers and managing them in a cross-cultural work environment are the challenges of maintaining a balance among a variety of socio-cultural factors.

Ensuring a Supply of Qualified IT Workers

The Irish IT labor force was consistently described by both IT firms and the government agencies promoting the country as young, flexible and well educated in addition to being English speaking. The first and last traits in this list are those upon which insightful policy makers decided to capitalize. The second is related to the cultural context from which this work force emerged. The third trait is both a product of the culture and the result of a concerted effort to align the

American Firms (46)	Irish Firms (22)
Apple Computer (4)	Computing Workshop
Digital Equipment	AppleCentre (1)
Corporation (9)	Expert Edge (3)
IBM (3)	General Controls and
Intel (3)	Automation (3)
Prime Computer (8)	Glockenspiel (3)
Stratus Computer (10)	HEClissmann (3)
Wang Laboratories (9)	Mentec (4)
	System Dynamics (5)

Table 1. Participating Firms (**#** Participants)

societal infrastructure with economic needs. Thus, the challenge of ensuring a supply, of qualified IT workers has been one of (re)designing societal structures to support this IT work and addressing real or potential barriers to wider participation.

(Re)designing societal structures to support IT work

Elements of both the societal and the physical infrastructures were adapted to become supportive of IT work and the IT sector. The most important societal aspect has been the educational infrastructure. While the educational system, in a general sense, was initially a contributing factor in Ireland's attractiveness to multinational companies, it also needed to be better aligned with the skill and knowledge demands of IT work in order for this sector to continue to thrive in Ireland. Irish policy makers recognized that the well-educated Irish population was a powerful resource that could be leveraged to support the emerging information sector.

But there were two serious issues to overcome as the country embarked upon its journey into the information sector. The first was establishing equality of access to education. This was accomplished in 1968 when secondary education became State funded. Until that time, the only option was to attend one of the private, religious schools that were geographically and economically unavailable to many people, especially those in rural Ireland.

The other issue was to enable potential IT workers to acquire the specialized skills and knowledge for work in this sector. In the 19608, the traditional university was not oriented toward vocational education much less vocational education of a technical nature. Consequently in the 1970s and 1980s, two new universities were established and the traditional universities were adapted to incorporate business and IT skills into their curricula. In addition, technical colleges were established around the country. American managers often commented on the high quality of the technicians' education that they considered to be equal or superior to that received by technicians in the States. Finally, evening, adult-oriented programs common in the United States were established. This enabled workers to develop their skills and employment prospects by pursuing undergraduate and graduate studies on a part-time basis. Besides educational programs, the government also sponsored training programs. Those with university degrees but without the proper IT skills as well as those who had been made redundant in other fields were able to acquire the requisite skills for work in the IT sector. In some cases, firms received training grants as an incentive to develop these human resources.

The educational piece is only one side of the equation, however. The other side of creating a national climate that can sustain an IT sector is ensuring a continuing supply of IT jobs. But doing so is not as simple as making sure that multinational firms continue to come to Ireland. There must be an alignment between the particular skill sets being developed in the schools and training programs, and the types of jobs that are becoming available. When there is a misalignment, young

Irish graduates have turned to emigration to find jobs non-existent at home. This has become an unintended consequence of the quality of Ireland's educational system: Irish IT workers have become a desired human resource in other countries which have an older and *lor* less qualified labor force. Consequently, many well-educated Irish graduates are being recruited by foreign firms while still attending university. From an economic development point of view, policy makers would prefer that the fruits of their educational investment remain in Ireland to provide economic payback. As a result of this new wave of emigration, industrial policy assessments have recommended a closer match between the educational plans of the universities and the employment opportunities available in the country.[12]

In addition to redesigning the educational infrastructure, there also was a need to upgrade - and in some cases put in place for the first time - the physical infrastructure needed to support IT work. Transportation, telecommunications and the physical plants to house the IT firms were needed. Thanks to funding from the European Union, Ireland was able to greatly improve its transportation infrastructure. The upgrading of the telecommunications infrastructure, especially in the rural west, had the unintended benefit of furthering Ireland's movement into the information sector. It was the state-of-the-art telecommunications system that encouraged multinational firms to look to Ireland not just for hardware manufacture and fmal assembly, but also for software development and off-shore. data processing."

Addressing barriers to wider participation in IT work

Three types of barriers to full participation in IT work are in evidence in Ireland. They are barriers related to age, gender and social class. The IT profession in Ireland is viewed as a young person's field. While this is also be the case elsewhere, it is especially noteworthy given the extremely young population of the country.[14] In my interviews, a person over the age of 35 was considered old. I noted a marked difference in the age profiles between the Irish and American sites of the multinational companies I had visited. In the early .1990s when this research began, there was an added reason for this age difference: those over the age of 35 had not had access to free secondary education when they were young. Consequently, they were fewer in number and those who were in IT would have come from families affluent enough have been able to send their children to private, secondary schools. Thus, at the time of my research a conflict between older and younger IT workers had not yet arisen. But looking a few years into the future when the young workers I interviewed would be in middle age and beyond, some challenging future scenarios arise.

The first scenario is that discrimination against "old" people (i.e., those over 35) will persist because they will be seen as not capable of the flexibility or mental alertness needed to cope with technological change. In such a scenario, the country will be depriving itself of the wisdom of experi-

ence and the talents of part of its population. Another scenario is a tension between the personal needs of younger and older adults. For example, both young and older respondents described the young workers as more willing to work overtime. Whereas older workers are more settled and have family obligations away from the workplace, the younger workers - especially those who are unmarried - have fewer such obligations and more willingness to work longer hours in order to 'get on' at the firm. Will the IT workplace be able to accommodate workers with a range of motivations and levels of commitment? The final scenario is about career paths. If a mentality persists that only young people can work in IT what will happen when people with university credentials have worked in IT firms for 20 years and want to move up? Where will they go? Will the IT sector be diversified enough to accommodate the career needs of experienced workers or will the IT sector only be able to accommodate young, entry level workers?

These issues .are not unique to Ireland. They can be found in the IT sectors of the United States and other countries. However, there are some noteworthy aspects of this finding for Ireland. First, while an age tension may exist in the U.S., older workers in the IT industry have more options because the headquarters are in the U.S. Thus, there is an option to migrate out of a purely technical position into management, for example. Those options are fewer if at all in Ireland. Second, the age differential is more dramatic in Ireland. Both Irish and American respondents noted the difference in the age profile of employees at the American versus the Irish sites of the same multinational firms. Finally, Ireland's dependence upon the IT sector is much greater than in the US. In America, older IT workers could leave the information sector and find employment in other sectors more easily than they could in Ireland.

The second type of barrier that was identified is related to gender. In the course of my interviews and observations, I witnessed the tension between opportunity and restriction with respect to this potential IT labor pool. Women, especially those working in multinational firms, thought it was easier for women to 'get on' in the IT sector than in traditional industries, banking and the civil service. There are three reasons why this is the case. First, because this industry depends upon intellectual not physical strength, women can theoretically compete equally with men. Skill is what counts. Secondly, IT represents a good work setting for women because it is a new industry and, as such, has not had as much time for the old, traditional, patterns to develop. There has been less time for traditions regarding gender-typed work to establish themselves. The final reason for greater opportunity in the IT field is the way in which it is developing in Ireland. Because the IT sector is dominated by American multinational firms, the values about gender that exist in America are being transmitted to Ireland through the medium of corporate culture.

However, these positive sentiments about gender and IT coexist with an acknowledged stereotype of IT work as a male activity. Both men and women recognized that women are not full participants in the IT sector. From there, viewpoints diverged. Men were not sure why, thinking that women must want it that way or that things were changing. in the younger generation. Some women believed women *should* be less involved in work outside the home while others felt that the demands of family made women hold themselves back. The status of women in IT emerges from a cultural context of .large families and child rearing as a woman's responsibility. Given that reality, some women simply leave the workforce once they begin to have children. Others choose not to . progress as far in their careers in order to have time for their family .responsibilities. Those women with whom I spoke who had both families and demanding IT jobs acknowledged the inner conflict between career and family.

The final type of barrier relates to social class. This is a complicated barrier to address, in part, because of the reluctance of many Irish people to acknowledge the presence of social class boundaries in Ireland. Part of the country's post-colonial legacy is the desire to reject rigid social class categories. Nevertheless, there is ample evidence of social class boundaries even if they are more permeable, perhaps, than in other countries." The issue at hand is barriers to working clas-speople entering the information sector. To the extent that information sector work is knowledge-based; education is the key. But attitudes are also intertwined with this issue.

Until secondary education became free in 1968, there was a concrete barrier to participation in information sector work. Since the absence of a high school degree is a definite barrier to IT work, there was clear evidence of social class .distinctions among workers who would have been of high school age in the late 1960's. But even after secondary education became freely available to all, attitudes about education have continued to serve as a barrier. In family settings without a history of or value placed upon education, there can be pressure on young people to enter the work force as soon as possible in order to add to the family income.

Other types of barriers - both educational and attitudinal - come not from the working class people or their families but from middle class people. These types of barriers .were in evidence primarily in the indigenous firms. Indigenous firms tend to be smaller and focused on the software and information services subsectors of the information sector. These are also the subsectors having higher educational requirements. Whereas the multinational firms employ workers at a range of levels from technician (with perhaps only the Leaving Certificate") to graduate engineers, the Irish firms tended to require university credentials. Thus, to the extent that there is a barrier to university attendance among working class people, there is a barrier to their participation in indigenous IT firms, In addition, I found evidence of attitudinal barriers in Irish firms, Informants talked about the importance of one's accent and address in securing employment. While they acknowledged this to be much less prevalent in the IT sector than in other sectors in Ireland, I observed and informants agreed that it, nevertheless, exists.

Managing IT Workers in a Cross-Cultural Work Environment

Five or seven years ago, if someone asked me what corporate culture was, I'd say, "That's bullshit. You come in, there's a job to do, people got paid, and the product and the process and the information systems, that all dictates what goes on at work." That's not it at all. The culture dictates everything below that. The culture, in one way or another, will dictate the process that you use. And I never would have believed that because it was too 'touchy feely.' At the time, I mean, if it couldn't be measured, if it's not quantifiable, I would have said, "It's not true."

This young American manager shared with me his change in perspective after working for a year in Ireland. He learned from experience that the context has considerable impact on what gets done and how it gets done." The lesson he learned underlies the second set of human resource issues: managing IT workers in a cross-cultural work environment in which the *American culture* is embedded in the *corporate culture* of these firms. Interestingly, the American managers at the multinational firms tended to downplay national culture emphasizing, instead, what they considered to be the unique characteristics of their own corporate cultures. However, as I moved from one American firm to another, I saw considerable similarities in the multinational corporate cultures, all of which reflected American culture. While a firm's corporate culture - its values, management style, method of operations and work environment -   are, to a certain extent, unique to each particular firm, it also reflects the national culture in which it developed. Thus, the corporate culture of an American firm brings to Ireland not only its own unique values but also those present in the American culture.

Another interpretation might be that what is at work, here, is a *monolithic IT culture.* While it is true that the culture of firms in the IT sector is different from the culture of firms in the banking sector, for example, it is also true that corporate cultures exist within national cultures. A given IT culture is shaped by real people who come from real countries which have real cultures. One cannot separate the corporate culture of an American IT firm from the American culture from which the entrepreneurs who founded it emerged.

The management question, then, is what happens when these two different cultures interact. In a positive vein, I found that the Irish IT workers generally welcomed the American culture, but for an unexpected reason. They saw an alignment between the open and egalitarian style reflected in the IT culture of the multinationals and what they identified as characteristic of the *essential* Irish culture reflecting their Celtic origins. They contrasted this with those essentially British modes of thought, feeling and behavior that permeated Irish institutions while Ireland was a British colony. Ironically, they identified *indigenous* firms in traditional sectors as reflecting the rigid, hierarchical atmosphere typical of the British management style.

At the same time, I also witnessed a tension between American and Irish managers over how far the cultural influence should go. While it is true that there are two different national cultures interacting, it is also the case that the balance of power is not even. Not surprisingly, the American managers with whom I spoke, viewed the American culture which is embedded in the multinational's corporate culture to be the desired one. Some of them believed that the multinational firms *ought* to have a significant cultural impact. One managing director recommended that multinational firms keep Americans in management control until the corporate culture imported from America is firmly in place. The rationale is that since a firm's success is due, in part, to its corporate culture, that same "successful" corporate culture ought to be in place in the same way at all locations of a multinational firm.

On the other hand, Irish managers -   especially Irish human resource managers -   argued for tailoring the corporate culture of the multinational firms to the particular national context. They recommended that when multinational companies are setting up operations they should work with managers who understand the local environment. To support his viewpoint, an Irish human resources manager related how his firm learned that lesson. The firm was having difficulty getting the Irish workers to acclimate to the values and processes inherent in its corporate culture. Twice the firm offered a course on those values and twice the outcome was disappointing. The third time, the Irish human resources manager was asked to co-teach the course with American management and the effort was successful.

. Recognizing that there are two distinct cultures is only part of the management challenge. The other part is grappling with the direction of cross-cultural influence. American managers tended to think that the direction would be primarily American culture influencing Irish culture. Not surprisingly, this perception did not sit well with all Irish people, as illustrated in one managing director's experience as he discussed cross-cultural effects with local community 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!"

One phrase which permeated conversations about cultural differences was "this is Ireland," American managers at all levels encountered this phrase; my own experience with management practices in Ireland bore them out. Responses such as "Well, this is Ireland; things are different in Ireland," or "You don't do that, this is Ireland," were meant to convey that people in Ireland had their own ways of doing things and perhaps did not want to change.

The perceptions on the part of Irish workers and managers was that while the multinationals were bringing certain values and attitudes to the workplace, there was also a

significant influence of Irish culture on the multinational IT workplace. One Irish entrepreneur who had strong views on this topic gave an example from a Japanese firm where he had worked.

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 finn], 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 gray and his skin was dry and he looked very tired. And I said, "John, how are things going?" and he said, "Ach, 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 mellowed from some of the Japanese ways were taken out of the situation and put back to Japan.

Using rich description, the point of this man's story is that the Japanese firm was reluctant to leave its expatriate managers in Ireland too long lest they absorb too much of the Irish culture.

But at the same time that there was evidence of resistance to the multinational influence, there was also the recognition that importing another work culture was part of the plan. Like many newly industrializing countries leaping from an agrarian to a post-industrial economy, Ireland did not have much of an industrial work ethic, much less a post-industrial one. Therefore, by bringing in multinational firms in the information industry, Ireland would be able to import a well-established work ethic that would have taken considerably longer to develop if done indigenously. What has helped both Irish workers and multinational managers is that a large percentage of IT workers have no other work experience, no entrenched work habits acquired in other sectors that need to be overcome.

Despite the desire to import an IT work ethic, there has not been unquestioning acceptance of it. Both sides have needed to adapt. For their part, Irish workers have had to cope with the influence of the "live to work" attitude which they attribute to Americans. Quality of life is important in Ireland and an important part of quality of life is time with family. An example repeatedly given was the Christmas holidays. It is traditional in Ireland for workers to have time off during the week between Christmas and New Year's. But for produc-

tion-oriented computer hardware firms, the end of the quarter and the end of the calendar year is a very important time. While workers understood this, they also regretted the impact on family life.

American managers, on the other hand, have had to integrate important aspects of Irish culture into their management practices. Key among these is the Irish focus on interpersonal interaction and the residual effects on time, communication and an easygoing atmosphere. There was unanimous agreement that Irish IT workers are more social and more communicative than their American counterparts. Observational evidence comes from the time people take before beginning a day's work to discuss experiences from the night before, the common place where people gather for coffee and tea breaks during the day, and the local pub where people congregate after work. While this behavior could be viewed as detrimental to productivity, I was also provided with ample evidence that it contributes to it as well. American managers described Irish workers as more well-rounded, more knowledgeable about the "big picture" at the firm, and not simply their own small piece of it. This, they attributed to the level of social interaction.

There was also unanimity about the Irish attitude toward time. It is a cultural fact that time is a much more fluid concept in Ireland than it is in America (and especially in the American Northeast where most of the firms I visited were headquartered). American management's reaction to the easygoing attitude about life, in general, and time, in particular, represents the range of possible management responses. One approach was to impose strict controls regarding tardiness and implement them with time cards. Another - and more creative - response was explained by an American managing director to illustrate that there is more than one way to achieve a management goal. When he first arrived in Ireland he was advised to implement time cards, But he was also informed that because all employees needed to be seen to be equal, be would have to punch a time card as well. This was unacceptable to him. His creative solution which tapped into the workers' desire for leisure time, was to implement flex time. Workers could arrive between 7:00 and 9:00 in the morning and leave after an eight hour day. To the chagrin of the skeptics, many more workers showed up at 7:00 than at 9:00 so that they would have longer evenings after work!

Conclusion: Lessons Learned

Ireland's experience with leapfrogging the development of an IT labor force by importing expertise and employment has instructive lessons for both policy makers and multinational managers in other countries. These lessons serve to reinforce the research model underlying this project: that the IT sector (including its workforce) is situated within a socio-cultural context which is helping to shape it even as the IT sector, itself, is effecting changes in the society of the host country. Figure 2 shows the Influence-Impact Model applied to the specific issues addressed in this paper.

Because of the specialized skills required for employ-

ment in the information sector, education is the key to economic and employment opportunity. Clearly, the educational infrastructure must provide the requisite skills and knowledge. But 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 economic, gender and class barriers may inhibit full and equal participation in the emerging information society (Clancy, 1988; Trauth, 1993; Trauth, 1995).

In order to ensure that there is a societal climate which can sustain this IT sector and these workers, the educational infrastructure needs to be aligned with the skills and knowledge required for IT work. Further, 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 Irish emigration has resulted in some of the best and brightest leaving a country. Clearly, this is an issue for industrial policy makers to address.

Another set of lessons, which are about managing IT workers in a cross-cultural environment, derive from the simple but significant acknowledgement that two different cultures are involved when a multinational IT firm sets up operations in a country. One lesson is that both of these cultures have positive contributions to offer the workplace. There are implications for both multinational and indigenous workers. Multinational managers should strive to understand work patterns and attitudes of the host country culture that, while different, may be able to produce the desired result. Multinational managers should also understand that in introducing a corporate culture they are also introducing a foreign national culture. At the same time, host country managers and policy makers must recognize that when the intent is to import expertise in order to quickly introduce an IT sector, one side effect will be the changes in national culture. One way to cope with these two cultures is by focusing on what the two have in common. In the case of Ireland, for example, managers could leverage the alignment between the egalitarian style of American IT fmns and aspects of the essential Irish culture.

By recognizing that there is more than one way to achieve a management goal, multinational managers can develop procedures and management approaches that exploit the best features of the host country. In the case of Ireland, American managers learned that 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 another cultural context. Likewise, what works best in Japan or in America may not be what works best in Ireland.

In the presence of two distinct cultures, it is also necessary to acknowledge that cultural influence goes in both directions. 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 influence the corporate culture to make it compatible with their own. By building a permeable wall, by the open exchange of values and norms both cultures can be enriched, something that bodes well for the global IT sector.

Appendix: Interview Categories

I.   Respondent Background: job description, educational background, work history, family background
II.   Socio-cultural Factors - Individual
      A. Work Life: work ethic, work culture, management style, unions
      B. Personal Life: quality of life, standard of living, family, religion
III. Socio-cultural Factors - Societal
      A. Population: age, size, gender, education
      B. National Traits: authority, personalism, individualism, post-colonial legacy, social interaction, time, island mentality
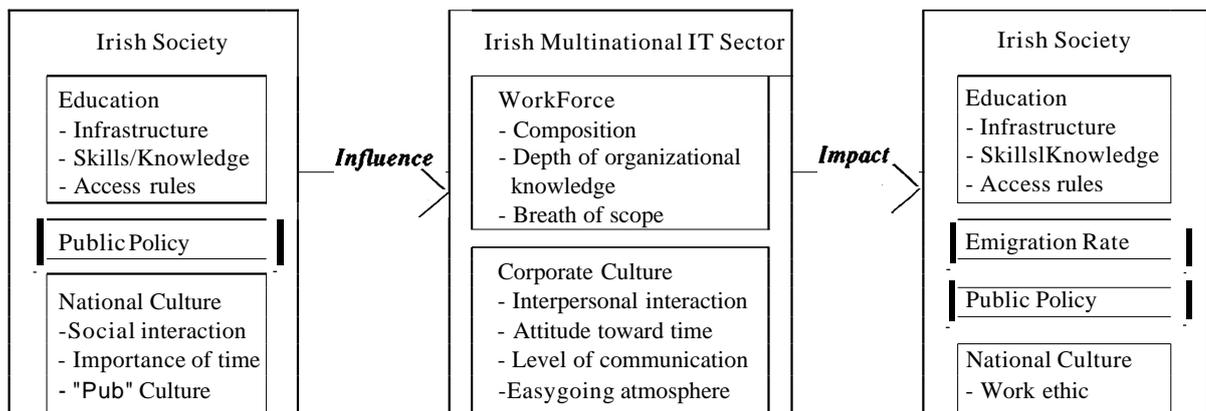
Figure 2. Interaction between Societal Factors and Multinational IT Sector in Ireland

Irish Studies community who have provided critical feedback on this work.

Endnotes

1 According to Porat (1977) the information economy is divided into the *primary information sector* and the *secondary information sector.* I limited my investigation to the *primary information sector,* which includes those who develop the information technology: the hardware, software and systems. Those working in the secondary information sector, those engaged in information processing activities in the course of doing work related to some other primary activity (such as insurance processing), were not included in the study.

2 See, for example, Ang and Jiwahhasuchin (1998), Gan (1998), Hernandez, et al. (1996), Hill, et al. (1998), Lally (1994), La Rovere (1996), Odedra-Straub (1993), Trauth, et ale (1998), Van Rychegbam (1996), Wilson and Meadows (1998), Wong (1998).

3 See, for example, Braa (1996), Burn, et al, (1995), Cummings and Guynes (1994), Heeks (1996), Kedia and Bhagat (1988), Lopez (1996), Nelson and Clark (1994), Neo (1991), Walsham, et ale (1988). Books such as Palvia, et al (1992) address both country-specific issues and development/cross-cultural issues.

4 Previous papers written from this research project have focused on specific dimensions of this study. In contrast, this paper is the result of a meta study of specific findings of the study: those with implications for IT human resources management. Papers from this research project which focus on other, specific dimensions of the study include the following:

Trauth & Pitt, 1992: The impact of telecommunications privatization on later industrializing countries.

Trauth, 1993: The evolution of an educational infrastructure compatible with an information economy.

Trauth, 1995: The influence of the role of women in Irish society on their participation in the information economy.

Trauth, 1996: The cultural and economic effects of importing foreign cultures along with multinational employment.

5 While multinational firms from other countries such as Japan and Germany are present in Ireland, this research was restricted to American firms only.

6 On occasion the scheduled time period ended before the respondent had given all of her/his comments and a second interview was held. There were two notable exceptions to the standard interview time and place (at the firm). One was the interview with an American manager which turned into a dinner invitation and an entire evening spent interviewing him and his wife. The other was the six-hour interview with an Irish software engineer, which was conducted in a Dublin pub.

7 This overview of Ireland's movement into the IT sector has resulted from formal and informal interviews with government officials in Ireland as well as from examination of books and public policy documents. Some of the key books used in this research are the following: Breen, et aI. (1990), Daly (1992), Jordan (1992), O'Malley (1989) and Rottman, et al, (1982). Some of the key public policy documents are the following: Whitaker (1958), National Economic and Social Council (1982), *The Way Forward: National Economic Plan* 1983-1987, *White Paper on Industrial Policy, 1984, Review of Industrial Performance, 1986, Building on Reality, 1985-1987, Industrial Development Act of 1986, Programme for National Recovery, 1987,* National Software Directorate, 1995.

8 It was the combination of high emigration and high unemployment that signaled the need for a change in the economic policy of isolationism.

9 In the case of Ireland, localizing software means tailoring commercial packages such as those from Microsoft and Lotus for European consumers.

10 See, for example, "Europe's Tiger Economy," (1997); "Ireland Shines" (1997); Jordan (1992); and O'Riain (1997).

11 These financial incentives included both tax relief and financial grants. Depending upon when the firms came to Ireland and where they located, the financial packages varied. But generally the firms were offered zero or low tax rates for a certain period of time. In addition, they were offered grants for establishing and equipping their factories, and training their work forces. In some instances, the Irish government actually built the factories on greenfield sites.

12 See, for example, Industrial Policy Review Group (1992).

13 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, while in Dublin the Financial Services Center provides data processing for European financial services firms. (See, Industrial Development Authority, 1992)

14 Over the past 30 years, roughly half of the population has remained under the age of 30, oftentimes younger than that.

15 One signifier of social class that initially puzzled me is the religious order running the secondary school one attended. In my interviews, people would regularly include comments such as: ". . . it was a Jesuit school" or ". . . the Christian Brothers taught me," when giving me their educational history in order to indicate whether they came from a middle class or a working class family.

16 Attaining the Leaving Certificate is the approximate equivalent of receiving a high school diploma.

17 See Hall (1994) for an account of how he learned this lesson in working with Native Americans in the American Southwest.

References

Ang, A.Y. and Jiwahhasuchin, S. (1998). "Information Systems Education in Thailand: A Comparison between the Views of Professionals and Academics, *Journal of Global Information Management,* 6(4), 34-42.

Ayiku, M.N.B. (1989). "A Case Study in Process Automanon in Ghana," *Information Technology for Development,'* 4(2), 117-156.

Braa, J. and Monteiro, E. (1996). "Infrastructure and Institutions: The Case of Public Health in Mongolia," in *Information Technology Development and Policy: Theoretical Perspectives and Practical Challenges.* E.M. Roche and M.I. Blaine (eds.) Aldershot, UK: Avebury Publishing Ltd, 171-188.

Breen, R., Hannan, D.H., Rottman, D.B. and Whelan, C.T. (1990). *Understanding Contemporary Ireland: State, Class and Development in the Republic of Ireland.* Dublin: Gill and Macmillan.

Building on Reality: 1985-1987. PI.2648. Dublin: The Stationery Office.

Bum, J.M., Ng Tye, E.M. W., and Ma, L.C.K. (1995). "Paradigm Shift - Cultural Implications for Development of IS Professionals," *Journal of Global Information Management,* 3(2), 18-28.

Clancy, P. (1988). *Who Goes to College: A Second National Survey of Participation in Higher Education.* Dublin: Higber Education Authority.

Cummings, M.L. and Guynes, J.L. (1994). "Information System Activities in Transnational Corporations: A Comparison of U.S. and Non-U.S. Subsidiaries," *Journal of Global Information Management,* 2(1), 12-26.

Daly, M.E. (1992). *Industrial Development and Irish National Identity, 1922-1939.* Syracuse, NY: Syracuse University Press.

Europe's Tiger Economy (1997). *The Economist.* (May 17), 21-24.

Gan, S. (1998}. "An Overview of Information Technology and Education in Malaysia," *Journal of Global Information Management,* 6(1), 27-32.

Hall, E.T. (1994). *West of the Thirties: Discoveries Among the Navajo and Hopi.* NY: Doubleday.

Heeks, R. (1996). "Promoting Software Production and Export in Developing Countries," in *Information Technology Development and Policy: Theoretical Perspectives and Practical Challenges.* E.M. Roche and M.J. Blaine (eds.) Aldershot, UK: Avebury Publishing Ltd, 77-94.

Hernandez, D., Gibson, R. and McGuire, E.G. (1996). "Informatics' in Uruguay: Evolution and Implications," *Journal of Global Information Management,* 4(I), 23-31.

Hill, C.E., Loch, K.D., Straub, D.W., and EI-Sheshai, K. (1998). "A Qualitative Assessment of Arab Culture and Information Technology Transfer," *Journal of Global Information Management,* 6(3), 29-38.

Industrial Development Act of 1986.

Industrial Development Authority. (1992). *Ireland as a Cost Competitive Location for Back Office Data Processing and Remote Software Development Operations.* Presentation to Taylorix AG.

Industrial Policy Review Group (1992). *A Time for Change: Industrial Policy for the 1990s.* Dublin: Ministry for Industry and Commerce.

Ireland Shines (1997). *The Economist.* (May 17), 16.

Jordan, D. (1992). "The Ireland-Silicon Nexus." *Journal of the West.* 31(2), 79-84.

Kedia, B.L. and Bhagal, R.S. (1988). "Cultural Constraints on Transfer of Technology across Nations: Implications for Research in International and Comparative Management," *Academy of Management Review,* 13(4),559-571.

Lally, L. (1994). "The Impact of Environment on Information Infrastructure Enhancement: A Comparative Study of Singapore, France and the United States," *Journal of Global Information Management,* 2(3),5-12.

La Rovere, R.L. (1996). "Diffusion of IT and the Competitiveness of Brazilian Banking," in *Information Technology Development and Policy: Theoretical Perspectives and Practical Challenges.* E.M. Roche and M.I. Blaine (eds.) Aldershot, UK: Avebury Publishing Ltd, 95-112.

Lopez, E.J. and Vilaseca (1996). "IT as a Global Economic Development Tool," in *Information Technology Development and Policy: Theoretical Perspectives and Practical Challenges.* E.M. Roche and M.I. Blaine (eds.) Aldershot, UK: Avebury Publishing Ltd, 57-75.

National Economic and Social Council (1982). *A Review of Industrial Policy: A Report Prepared by the Telesis Consultancy Group. No.64.* Dublin: Author.

National Software Directorate (1992). *The Software Industry in Ireland: A Strategic Review.* Dublin: Industrial Development Authority.

Nelson, K.G. and Clark, T.D. (1994). "Cross-Cultural Issues in Information Systems Research: A Research Program," *Journal of Global Information Management,* 2(4), 19-29.

Neo, B. S. (1991). "Information Technology and Global Competition," *Information & Management,* Volume 20, 151-160.

Odedra-Straub, M. (1993). "Critical Factors Affecting Success of CBIS: Cases from Africa," *Journal of Global Information Management,* 1(3), 16-31.

O'Malley, E. (1989). *Industry and Economic Development: The Challenge of the Latecomer.* Dublin: Gill and Macmillan Ltd.

O'Riain, S. (1997). The Birth of a Celtic Tiger. *Communications of the ACM.* 30(3), 11-16.

Overseas Industry in Ireland (1991). A. Foley and D. McAleese (Eds.), Dublin: Gill and Macmillan, Ltd.

Palvia, S., Palvia, P. and Zigli, R. (eds.) (1992). *The Global Issues of Information Technology Management.* Harrisburg, PA: Idea Group Publishing.

Porat, M. (1977). *Information Economy: Definition and Measurement.* Washington, D.C.: Office of Telecommunications.

Power, C. (1990). 1992: *A New Dawn for Knowledge-based Industries in Ireland.* Paper presented at the Bolton Trust international seminar, "1992: Its Impact on Technological Education," Dublin, February.

Programme for National Recovery (1987). P1.5213. Dublin: The Stationery Office.

Review of Industrial Performance (1986).

Rottman, D.B., Hannan, D.F., Hardiman, N. and Wiley, M.M. *(1982). The Distribution of Income in the Republic of Ireland: A Study of Social Class and Family Cycle Inequalities.* (No. 109). Dublin: Economic and Social Research Council.

Strauss, A.L. (1987). *Qualitative Analysis for Social Scientists.* New York: Cambridge University Press.

Trauth, E.M. (1997). "Achieving the Research Goal with Qualitative Methods: Lessons Learned along the Way," in *Information Systems and Qualitative Research.* A.S. Lee, J. Liebenau and 1.1. DeGross (Eds.) London: Chapman and Hall, 225-245.

Trauth, E.M. (1993). "Educating IT Professionals for Work in Ireland: An Emerging Post-industrial Country," in *Global Information Technology Education: -Issues and Trends.* M. Khosrowpour and K. Loch (Eds.) Harrisburg, PA: Idea Group Publishing, 205-233.

Trauth, E.M. (1996). "Impact of an Imported IT Sector: Lessons from Ireland," in *Information Technology Development and Policy: Theoretical Perspectives and Practical Challenges.* E.M. Roche and M.I. Blaine (eds.) Aldershot, UK: Avebury Publishing Ltd, 245-261.

Trauth, E.M. (1995)." Women in Ireland's Information Economy: Voices from Inside." *Eire Ireland,* 30(3), 133-150.

Trauth, E.M., Derksen, F.E.I.M., and Mevissen, H.MJ. (1998). "Societal Factors and the Diffusion of EDI," in *EDI and Data Networking in the Public Sector: Governmental Action, Diffusion and Impacts.* K.V. Andersen (Ed.) Boston: Kluwer Academic 'Publishers, 43-61.

Trauth, E.M. and O'Connor, B. (1991). "A Study of the Interaction between Information Technology and Society: An Illustration of Combined Qualitative Research Methods,' in *Information Systems Research: Contemporary Approaches & Emergent Traditions.* H.E. Nissen, H.K. Klein & R. Hirschheim (Eds.) Amsterdam: North-Holland, 131-144.

Trauth, E.M. and Pitt, D.C. (1992). "Competition in the Telecommunications Industry: A New Global Paradigm and Its Limits," *Journal of Information Technology,* 7(1), (March), 3-11.

Van Ryckeghem, D. (1996). "Computers and Culture: Cases from Kenya," in *Information Technology Development and Policy: Theoretical Perspectives and Practical Challenges.* E.M. Roche and *M.I.* Blaine (eds.) Aldershot, UK: Avebury Publishing Ltd, 154-170.

Walsham, G., Symons, V. and Waema, T. (1988). "Information Systems as Social Systems: Implications for Developing Coun-

tries," in *Information Technology for Development.* 3(3), 198-204.

The Way Forward: National Economic Plan 1983-1987. (1982). Pl.I0161. Dublin: The Stationery Office. October.

White Paper on Industrial Policy (1984). PI. 2491. Dublin: The Stationery Office. 12 July.

Whitaker, T.K. (1958). *Economic Development.*

Wilson, R.E. and Meadows, C.J. (1998). "Tele-Teaching: Australia's Competitive Question," *Journal of Global Information Management.* 6(1), 15-26.

Wong, P. (1998). "Leapfrogging across the Millennium: Information Technology in Singapore Schools," *Journal of Global Information Management, 6(1), 5-13.*

Eileen M. Trauth is an Associate Professor of Management Information Systems in the College of Business Administration at Northeastern University. Her teaching and research interests are the sociocultural, organizational, policy and educational impacts of information technology. Her articles have appeared in a variety of journals and scholarly books. Dr. Trauth is on the Editorial Boards of Journal of Global Information Management, Journal of Global Information Technology Management, and Annals of Cases on Information Technology Applications and Management in Organizations. She has also published a textbook entitled Information Literacy: An Introduction to Information Systems and is completing a book about her ethnographic study of an emerging information economy. She has taught and conducted research in several countries, including Ireland where she was a Fulbright Scholar. Professor Trauth is a member of the Association for Computing Machinery, the Information Resources Management Association, the International Federation for Information Processing, and the Society for Information Management. Professor Trauth received her Ph.D. in Information Science from the University of Pittsburgh.