



INTEL'S SITE SELECTION DECISION IN LATIN AMERICA

Ted Telford faced a dilemma. As the only full-time member of Intel Corporation's worldwide site selection team, he had to make a recommendation about where Intel should locate its first manufacturing plant in Latin America.¹ After months of analysis, involving both desk research and numerous field trips to potential country locations, the site selection team had narrowed the choice to four countries: Brazil, Chile, Mexico, and Costa Rica. All were attractive in different ways, but now it was October 1996, and Ted had to write his final report for the headquarters office in Santa Clara. Headquarters would want his recommendation and evidence to support it. He shifted uneasily in his chair. At stake was a long-term investment decision involving \$300-\$500 million, a substantial amount of money even for a company like Intel, with over \$20 billion in annual revenues. Ted hunched over his files, and began reviewing the data one more time.

Intel and The Semiconductor Industry

Microprocessors are the brains of personal computers. They are composed of millions of microscopically small transistors—essentially, tiny electronic switches—grouped and interconnected with each other on individual chips of silicon to store and manipulate data.² This is why microprocessors are often

¹ The principal members of the site selection team were Ted Telford, International Site Selection Analyst; Chuck Pawlak, Director, New Site Development; and Bob Perlman, Vice President for Tax, Customs, and Licensing. Telford and Pawlak worked out of Intel's Chandler, Arizona, office; Perlman was based at the headquarters office in Santa Clara, California. Beyond these three members, there was an extended group of about 15 Intel employees all over the world who participated in detailed assessment of countries on issues such as energy availability, construction, operations, security, etc. Frank Alvarez, Vice President of the Technology and Management Group, was also based in Santa Clara and ultimately had final say over the site selection decision, along with Mike Splinter, Vice President of Worldwide Manufacturing and, of course, Craig Barrett, Intel's CEO.

² Silicon is used because it is a semiconductor. Semiconductors are materials that can be altered either to be conductors of electricity or insulators—a useful quality in a material used for constructing the complex electronic circuitry of microprocessors. "Silicon Valley" is a nickname for the region around Stanford University, which includes many towns that serve as a home to important high-technology companies (including Santa Clara, where Intel headquarters were located).

Using sophisticated chemical processes and engineering techniques, microprocessors are manufactured by the hundreds on extremely thin layers of silicon known as wafers. Each wafer is about 6-8 inches in diameter. The microprocessors are tested while they are still on the silicon wafer. Later, these wafers are cut into individual pieces or chips, each containing one microprocessor. The microprocessors are then tested again, packaged, and sent to customers for installation in many different kinds of automated devices.

referred to as chips, as in “the Pentium II chip.” Computer software enables microprocessors to perform specific functions with the stored data. As a result, microprocessors today are found not just in computers, but in virtually any inanimate object that can “think” (be programmed to perform certain tasks): traffic lights, cars, cellular telephones, airplanes, etc.

This enormous range of applications for microprocessors spawned a huge industry—the semiconductor industry—with well over \$120 billion in sales in 1995, and a projected growth rate of over 20% per year.³ Intel, as the first company in the world to introduce microprocessors in 1971, quickly established a dominant position in this industry and, in 1996, remained the dominant player with over 85% of microprocessor sales worldwide.

Although Intel had a number of competitors, the company invested billions each year in Research and Development (R&D) in order to retain its lead in innovation and design of new chips. As a result, Intel was constantly introducing faster and more powerful microprocessors in order to stay ahead of the competition. Intel’s former CEO, Andy Grove, noted that in a high-technology industry such as semiconductors, “only the paranoid survive.”⁴

The contrast between Intel’s first microprocessor, the 4004, with only 2,300 transistors, and the one it planned to assemble and test in the proposed Latin American plant, the Pentium II—with over 7.5 million transistors—illustrated this dramatic rate of growth in computing power. Gordon Moore, one of Intel’s founders, highlighted the fast-paced nature of competition and innovation in the semiconductor industry when he devised his famous “Moore’s Law”: driven by competitive market forces, the power of microprocessors will double every 18 months. This law had been fairly consistent with developments in the industry, and Intel had been leading the way since the beginning.

Given the speed of developments and growth in the industry, Intel needed to open a new plant at a rate of almost one every nine months.⁵ Doing this, as well as maintaining high levels of spending on R&D, was very expensive—a serious disadvantage when the company had to deal with competitors who could imitate its product designs, then offer similar products at lower cost. Clearly, if Intel wanted to remain competitive, it could not pass on these costs to consumers in the form of higher prices. Early on, then, Intel’s management realized that the company would have to build at least some plants in countries where costs (especially labor costs, which in assembly and testing facilities amount to between 25-30% of total costs) would be lower than in the United States.⁶

Intel’s first overseas plant was built in Malaysia in 1972. Later plants followed in Israel, the Philippines, Ireland, and mainland China. But now, in 1996, Ted knew that there was a sense among management that the next plant should be in Latin America. Excessive investment in one region could create risks. For example, although Intel’s plant in Malaysia had been productive for many years, in 1996 the plant faced problems resulting from a shortage of qualified labor. As a result, turnover among employees was approaching 30-40%, training was becoming expensive and difficult, and salaries were rising. It made sense to diversify the geographic location of the plants. The company already had a number of plants in Asia, but absolutely none in Latin America. The region offered relatively low labor costs, as well as logistical advantages for exporting production to the U.S. or Europe.⁷

³ World Bank, Foreign Investment Advisory Service, *FDI News*, December 1996, p. 5.

⁴ Grove later wrote a book with this title.

⁵ Debora Spar, “Attracting High Technology Investment,” Foreign Investment Advisory Service, World Bank, Occasional Paper #11, April 1998, p. 4.

⁶ *Ibid.*, p. 8.

⁷ Interview with Ted Telford, Site Selection Analyst, Intel, Glendale, Arizona, September 10, 1998.

Intel's Proposed Latin American Plant: Characteristics

Ted knew that the plant Intel had in mind would be an assembly and testing facility, rather than a more sophisticated fabrication plant ("fab"). Still, when it came to making microprocessors, assembly and testing was an involved, complex process, requiring significant technical and engineering expertise, clean rooms, advanced knowledge of chemical processes, and considerable expense. The site selection committee already knew that the plant or plants would employ about 2,000 technicians and engineers initially; this number would eventually increase to 3,500. It would also require the participation of significant numbers of expatriate personnel for extended periods, at least during the startup phase.

While all of these considerations would influence the site selection process, the size of the selected country's market would be irrelevant. This was because Intel planned to export 100% of the product assembled and tested at the plant; almost all of that would be going to the United States.

The Site Selection Process, Phase 1: Desk Research—And Costa Rica Makes the Short List

As Ted reviewed the data before him, he reflected on the long, highly systematic site selection process. It had all started with several weeks of desk research. During that time, a group of Intel employees had gathered as much information as they could on a long list of countries in Latin America. The group gathered data on such issues as political and economic stability, labor unions and labor regulations (a particular concern of Intel's), infrastructure, and the availability of an educated workforce (after all, the plant would need trained technicians and engineers).

After this desk research, Ted had been able to eliminate some countries altogether. Venezuela, for example, seemed to be too unstable financially; the desk research phase quickly ruled it out as a serious candidate. But three countries stood out as seeming to have necessary conditions for Intel's planned investment: Mexico, Chile, and Brazil. Costa Rica was added later.

Ted recalled that Costa Rica had *not* been on the original short list. It was only after officials at *Coalición Costarricense de Iniciativas para el Desarrollo* (CINDE, Costa Rica's Investment Promotion Agency) had given presentations to Silicon Valley executives in late 1995 about Costa Rica's potential as a center for high technology investment that Intel executives in California had considered this possibility.

CINDE had been created in 1982 with financial assistance from the United States Agency for International Development (USAID). Its original purpose was to serve as a private, nonprofit export promotion center. Its Board of Directors was (and still is) composed almost entirely of businessmen from the Costa Rican private sector. CINDE was a collaborative effort between USAID and civic-minded businessmen in Costa Rica to promote nontraditional exports (in Costa Rica, this meant anything that was *not* bananas or coffee) and enhance economic development in Costa Rica.

At the time CINDE was created, the Reagan administration was hoping to strengthen the private sector in Central America and the Caribbean to prevent the spread of political instability in these regions. The Administration's Caribbean Basin Initiative (giving preferential access to the U.S. market for manufactured goods from Central America and the Caribbean) was one way to do this. USAID's creation of CINDE was a separate policy but was consistent with the overall strategy.⁸

⁸ Mary A. Clark, "Transnational Alliances and Development Policy in Latin America: Non Traditional Export Promotion in Costa Rica," *Latin American Research Review*, Vol. 32, No. 2, 1997, p. 91.

Over the years, especially after the end of the Cold War in the early 1990s and the fall of the Sandinista regime in Nicaragua in 1990, USAID reduced its funding to Costa Rica and finally closed its offices in the country in 1996. CINDE, with new funding from the World Bank and a trust fund of its own to finance its activities, continued—but with a different emphasis.

Following advice from a consultant with the highly successful Irish Development Authority (IDA)—Ireland's investment promotion agency—as well as from the World Bank, CINDE's directors realized that they should focus on promoting investment from specific firms in specific industries.⁹ Professors at the *Instituto Centroamericano de Administración de Empresas* (INCAE), Costa Rica's premier business school, gave CINDE similar advice. Founded by Harvard University, INCAE was influenced by Harvard professor Michael Porter, a frequent visitor to the school and a close adviser to Costa Rica's president, Jose Maria Figueres (himself a Harvard graduate). INCAE recommended that CINDE pursue Porter's idea of promoting clusters of firms in particular industries as a way to accelerate national economic development.¹⁰

In a detailed study, the World Bank recommended to CINDE that it should target the electronics industry.¹¹ The Bank argued that the level of technical education in Costa Rica, and the number of electronics firms already located there, made it a suitable location for attracting a number of companies and creating clusters of firms in this industry. Others in CINDE had already made similar arguments, but the World Bank study confirmed these views.¹²

While not a government organization itself, CINDE was fortunate that it had support for its plans at the highest levels of government. Costa Rica's President, Jose Maria Figueres (1994-98), was very interested in promoting high-technology investment in Costa Rica.¹³ Educated at West Point (with later graduate study at Harvard), Figueres had a vision of making Costa Rica a haven for high-technology investment. He believed very strongly that the country would be left behind in its quest for economic development if it remained principally an exporter of bananas and coffee, with only some manufacturing investment in low-tech, low-wage, low-value-added industries such as textiles. Costa Rica's gradual increase in Gross Domestic Product (GDP)/capita, education levels, and living standards, combined with the end of political unrest in neighboring Central American countries, had already resulted in a migration of investment out of Costa Rica's textile sector. New investment in this industry was going to countries like Nicaragua, where wages were much lower.

Clearly, changes in the world economy meant that Costa Rica would have to change its strategy, as well. As Figueres explained his government's plan:

⁹ Interviews with CINDE officials, San Jose, Costa Rica, October-November 1998.

¹⁰ Thomas T. Vogel, "Costa Rica's Sales Pitch Lures High-Tech Giants Like Intel and Microsoft," *Wall Street Journal*, April 2, 1998, p. A-18; interviews with CINDE officials, San Jose, Costa Rica, October-November 1998.

¹¹ The World Bank, "Costa Rica: A Strategy for Foreign Investment in Costa Rica's Electronics Industry" (Washington, D.C.: The World Bank), 1996.

¹² Interview with Rodrigo Zapata, former Vice President of CINDE (now General Manager for GE-Costa Rica), San Jose, Costa Rica, October 1998. The study was conducted by the World Bank's Foreign Investment Advisory Service. Although the final version was published in 1996, CINDE was well aware of its main points long before that time.

¹³ Jose Maria Figueres was the son of Jose (Pepe) Figueres Ferrer, who led a civil war in 1948 when the Costa Rican legislature had nullified the outcome of a presidential election for a candidate who had won a legitimate election victory. During a brief period as interim president immediately following the war, Pepe Figueres succeeded in writing a new constitution and abolishing Costa Rica's military entirely, an unprecedented feat in Latin America (or virtually anywhere else, for that matter). He then turned power over to the rightful victor in the 1948 presidential election. He was elected president of Costa Rica himself several years later (1953-57).

We wanted to incorporate Costa Rica into the global economy in an intelligent way. Globalization was more than simply opening the country to foreign trade. We needed a national strategy not based on cheap labor or the exploitation of our natural resources. We wanted to compete based on productivity, efficiency and technology . . . many textile firms [had] left the country, and the government received severe criticism for not trying to sustain the maquila industry . . . [but] the foreign investment attraction strategy had changed. We wanted to attract industries with higher value-added, that would allow Costa Ricans to increase their standard of living.¹⁴

All of these factors, including the high level of support from the Figueres administration, made CINDE eager to approach Intel when they heard, in 1995, that the company was planning to put a plant somewhere in Latin America. CINDE officials paid a special visit to Intel's headquarters in Santa Clara and were able to persuade management there that Costa Rica should be on the list. During the actual country visits, the site selection team decided to visit Costa Rica on their way to Brazil.

The Site Selection Process, Phase 2: Initial Country Visits

Actually visiting the countries on the short list was crucial to get a sense, beyond all the data and statistics the team already had, of whether a plant would be a viable investment for a given country. For example, would the country's roads and airport facilities be adequate to transport the product quickly and efficiently to foreign markets? Did the country pose a security risk, to expatriate personnel or to the product? After all, silicon wafers containing hundreds of chips were very valuable—indeed, they were literally “worth more than their weight in gold.” (Intel executives used this phrase often in interviews when referring to silicon wafers.) If trucks transporting hundreds or thousands of these on a daily basis were likely to be robbed, the site should be ruled out.

Other questions Intel wanted answered were even more difficult to glean from secondhand written reports. For example, would Intel executives be able to negotiate effectively with government officials in the country in question? Could a good working relationship be established? Finally, would expat managers be happy living in the country?

Ted was in charge of making the initial contacts with the relevant government officials in each of the countries the site selection team planned to visit. In setting up the visits for the team, he wrote detailed letters explaining what the team hoped to learn during its visit. Central concerns, he stressed, included the following:

- * *availability of technical personnel and engineers to staff the proposed plant;*
- * *labor unions and labor regulations;*
- * *transportation infrastructure and costs (roads and airports only, since Intel would export all of its product via air);*
- * *the availability and reliability of the electrical power supply;*
- * *the government's corporate taxation rates—and more specifically—whether the government offered any tax incentives for investments of the kind Intel proposed to make.*

Ted had been confident in asking about incentives, for he knew that his requests for meeting with the relevant government officials would be well received. In the past, governments in Latin America had adhered to ideas of protectionism and economic nationalism, but by the late 1990s those ideas were a thing of the past. The proposed investment was something that would be attractive to almost any

¹⁴ Excerpt from interview with Jose Maria Figueres, quoted in Nils Ketelhohn, “The Costa Rican Electronics and Information Technology Cluster,” unpublished manuscript, 1998, p. 6.

government in Latin America. After all, Intel's \$300-\$500 million investment would bring with it thousands of good jobs for technically trained workers and engineers.

In addition, rather than displacing indigenous producers by selling in the domestic market, Intel's product would be 100% exported. This would also contribute to the country's balance of payments. Finally, there was the possibility that Intel would use at least some locally produced components or products, thus creating so-called "linkage effects" and contributing to local economic development. If anything, Ted knew, Intel's proposed plant was the kind of project that countries would compete with one another to attract.

As it had turned out, the site selection team's initial experiences in each of the four countries were very important in making their decision. The team's first visit was to Costa Rica, then Brazil, Chile, and Mexico. Ted opened the first file, and began reviewing what he had learned.

Costa Rica

At first, despite CINDE's lobbying, Costa Rica had seemed an unlikely prospect. The country was simply too small. With only 3.5 million people and a tiny (if reasonably healthy) economy, the Intel executives feared that their investment would overwhelm the small nation. As Bob Perlman said, they were concerned that if Intel did invest in Costa Rica, it would be like "putting a whale in a fish bowl."¹⁵ But the CINDE officials had been persistent, and the site selection team was willing to give the country a closer look.

When it came to luring foreign investors, Costa Rica had many advantages. One was its well-deserved reputation for political stability and democratic government. Surrounded by other countries that had been engulfed in political turmoil and war for much of the 1980s, Costa Rica, in contrast, had abolished its military in 1948 and had been stable, peaceful, and democratic ever since. Costa Rican President Oscar Arias (1986-90) won the Nobel Peace Prize for brokering a peace among the warring Central American nations, thus enhancing Costa Rica's reputation as a center of peace and stability in a chaotic region. Since 1948, the nation had devoted its main government activities toward providing social welfare for the populace and improving education and health care. The government had even set aside over 25% of its national territory as national parks in order to preserve its astonishingly rich biodiversity (and to promote ecotourism).

But for Intel, more important than any of this was the role CINDE played in attending to their concerns. CINDE, autonomous from the government and administered by private business people, was by the mid-1990s a streamlined, efficient, flexible organization. One factor in CINDE's success was that its private status allowed it to pay its employees far more than they could have made working for the government. As a result, CINDE had bright, highly competent employees who were able to pursue Intel aggressively and creatively.

During the visit to Costa Rica, the site selection team was deeply impressed with how prepared CINDE was to receive them and answer their questions quickly and efficiently. The CINDE officials had clearly done their homework. For the harried team, trying to get information as quickly as possible so that a decision could be made and a plant could be built fast, this quality made a very favorable impression indeed.

¹⁵ Telephone Interview with Bob Perlman, Intel's Vice President for Tax, Customs, and Licensing, August 1998.

Following specific advice from Michael Porter, and also from the World Bank's Foreign Investment Advisory Service (an agency at the World Bank that provides less-developed countries with advice on investment promotion), CINDE knew that for a high-tech company like Intel, quick, speedy responses to questions were essential. Therefore, Enrique Egloff, CINDE's General Director, assigned three investment promotion specialists to the task of working exclusively on the upcoming Intel visit. Rather than waiting for the site selection team to arrive and then responding to questions, each of these CINDE officials researched potential questions *in advance* to *anticipate* what Intel might ask. Then, if asked, they were exceptionally well prepared with facts, figures, etc. Also, together the three organized visits for the Intel executives with all of the key government officials that they knew the team would want to meet.¹⁶

When Ted and his colleagues arrived in Costa Rica, CINDE had a well-planned, extensive agenda already laid out for them. During this and later visits, the Intel team was able to have in-depth discussions on relevant issues with, among others, the head of the ICE (the Costa Rican Electric Utility Company, still state-owned); the Minister of Transport and Public Works; the Minister of Education; the Minister of Science and Technology; the Dean of the *Instituto Tecnológico de Costa Rica* (ITCR); two separate accounting and consulting firms; and a number of other high-technology companies already established in Costa Rica, including Motorola, DSC Communications, and Baxter Healthcare. (Although Baxter had nothing to do with microprocessors, Intel found that it was useful to consult with this company during site selection. Like Intel, Baxter had operations all over the world and had similarly high standards in its production processes, such as the use of clean rooms.)

During the site selection team's initial visit to the country, CINDE officials arranged a visit with Jose Rossi, Minister of Foreign Trade, and President Figueres himself. Figueres impressed the team with his level of personal interest in the company, and his willingness to get involved in details of the negotiating process. But Figueres' level of personal involvement really hit home when the team casually mentioned that they were interested in getting to know Costa Rica's central valley better, since that was where the proposed plant would be located. Figueres said that if they could show up at 7:00 am the next day, he could arrange a helicopter tour. When Ted and his colleagues showed up early the next morning, they were astonished to find Figueres himself at the controls.

Despite the high level attention and the apparent willingness the government had to work with Intel, the site selection team still had several very serious concerns about Costa Rica. The main issues were:

- **Education**

Although Costa Rica appeared to have a sufficient number of engineers, it was lacking in mid-level technicians, crucial for staffing the assembly and testing plant. While the engineers needed to keep the plant operating might number in the several hundreds, the need for mid-level technicians would be in the thousands. Finding enough people with the right training was clearly going to be a problem in Costa Rica.

In discussing this problem with Figueres, the Minister of Education, and the Dean of the Costa Rican Technological Institute (ITCR), the virtues of Costa Rica's small size quickly became evident. All of these officials made clear that they could adapt to Intel's needs, modifying the curriculum of the ITCR and even creating a special certification program to produce the requisite numbers of technicians.

¹⁶ Interviews with all three individuals in San Jose, Costa Rica, October-November 1998.

Adapting to Intel's need in this way raised a potential problem. The site selection team had emphasized from the beginning that Intel did not want special treatment, no matter how much Costa Rica wanted its investment project. A major concern was that any special deals or special incentives offered by the Figueres government, and not done in a transparent, legal way, would create problems for Intel in the future, should the next president want to withdraw this special support. Intel was very explicit from the beginning, therefore, that the government not try to offer anything like this.

But the Costa Rican government took care to make sure that the agreement to modify the ITCR's curriculum did not fall into this category. Although the new curriculum would be created in direct response to Intel's concerns, adapting the ITCR's curriculum to Intel's rigorous standards would make the school's graduates better-trained overall, and thus better-equipped to work for *any* high technology firm. The modifications were not just for Intel—they were strengthening the ITCR generally.

In addition to investigating the technical preparedness of Costa Rica for the proposed plant, Ted and his colleagues also observed the level of English language proficiency in the general population, which they perceived to be much higher than it was in other Latin American countries. Ted and his colleagues observed that in Costa Rica, even cab drivers seemed to have a high degree of proficiency in English. Clearly, the general population was relatively well educated, and this was just one indication of that. In addition, the team noted that the current government had made English a required subject in the public school system. While a relatively minor point, English proficiency would be important when expatriates arrived to train local workers, especially since most technical manuals were in English.

- **Labor Issues**

Labor unions were a major concern of Intel's. It did not want them in any of its plants, anywhere in the world, even if they were weak or labor unions in name only. In large part this had to do with the company's complex, highly technical production processes, which simply could not function properly with work stoppages or other kinds of union-related disruptions. These kinds of issues appeared to present few problems for Intel in Costa Rica. In fact, only about 7% of Costa Rica's private-sector workers belonged to labor unions.¹⁷

Labor unions had not had much power in Costa Rica since the end of the civil war in the late 1940s, when the new government banned the largest labor confederation in the country because of its affiliation with the Communist Party. Later, when the *Partido Liberación Nacional* (PLN) government was elected in the 1950s, it established *Solidaridad* (Solidarity), a government-sponsored movement to create special voluntary associations as an alternative to more confrontational, industry-wide unions.

Workers who belonged to these *solidarista* associations received numerous benefits, including participation in special savings plans (with contributions made by employers as well as employees), low-interest loans, and profit-sharing. (The profit-sharing was with the association, not the company.) *Solidarista* associations were quite different from labor unions in that they allowed management as well as workers to participate, and had no negotiating power of their own. Some believed that this system had contributed greatly to "labor peace" in the workplace.¹⁸ Over 19% of multinational corporations in Costa Rica, including Firestone, McDonalds, and Colgate-Palmolive, had *solidarista* associations.¹⁹

¹⁷ Bruce M. Wilson, *Costa Rica: Politics, Economics, and Democracy* (Boulder, CO.: Lynne Rienner Publishers, 1998), p. 70.

In addition to the Solidarity movement, other factors also prevented the development of more traditional, combative labor unions in Costa Rica. One was the government's establishment of a national collective bargaining system, using wage boards to establish wage levels—thereby eliminating an important role for such unions. Still another was the law stating that unions could call a strike only if 60% of affected members signed a petition in favor of doing so, and a judge decided that the reason for the strike was valid. While the judge was deciding, the employer could fire any workers who were involved.²⁰

Clearly, labor unions in Costa Rica would not be a major concern for Intel. Moreover, wages in Costa Rica were low in comparison with those in the United States, even for technical workers or skilled technicians. However, this was also true of the other countries on Intel's short list, with the exception of Chile (more on that below).

- **Transportation**

While the roads from most potential sites for the plant to the airport were in excellent condition, and San Jose's international airport was acceptable, Intel's main concern was that the airport did not offer sufficient daily flights. This presented a very serious problem, because Intel would need to export all of its chips by air. After discussing the problem at length with Intel's executives, Costa Rica's Ministry of Transportation and Public Works was willing to be flexible in creating an "open skies" program. It began issuing more licenses and encouraging many other airlines to use the national airport. Again, while this might have seemed a special concession to Intel, it benefited other companies and other industries, especially the tourism industry, as well.

- **Electrical Energy**

Because Costa Rica was not accustomed to industrial projects of the size Intel proposed, it did not have adjusted rates for heavy industrial users. The rate for industrial users varied only between \$0.07 and \$0.09 per kilowatt-hour—much more expensive, for example, than Mexico's rate of about \$0.02 per kilowatt-hour.²¹

After discussion of this issue, ICE agreed to create a new rate for especially heavy users of electricity: \$0.05 per kilowatt-hour. This rate would apply to any company using more than 12 megawatts of electricity (more than any other user of electricity in the country). Again, this was *not* a special concession to Intel—because *any* large industrial user that chose to invest in Costa Rica could also take advantage of this heavy use rate.

- **Investment Incentives**

Costa Rica already offered generous incentives to companies located in its eight industrial parks with free trade zone status. Companies in the *Zona Franca* not only did not pay duties on imported parts or components, but were also completely exempt from income tax for eight years, and 50% exempt for four years after that. Intel wanted even more than this and the Costa Rican government was willing to negotiate. After all, other multinational corporations operating in the free trade zones, such as Baxter and Conair, had expressed concern about paying the higher tax rate at the end of their eight-year exemption, even if they planned to reinvest in the country.

¹⁸ CINDE Web site, www.cinde.or.cr.

¹⁹ Ibid.

²⁰ Wilson, *Costa Rica*, pp. 69-70.

²¹ Interview with Danilo Arias, former CINDE investment promotion specialist, San Jose, Costa Rica, October 1998.

Jose Rossi, the Minister of Foreign Trade, agreed to lobby the Costa Rican legislature for a change in the legislation. The new law would give a company a 75% exemption after eight years, provided that it reinvested more than 25% of its initial investment after the fourth year. Again, this would benefit not just Intel but other multinational corporations as well. Jose Rossi emphasized to Intel executives that he would do his best to push for the new policy to become law, but that he could promise no more than that.²² Working its way through the slow but democratic legislative process, this law finally passed in 1998.

Clearly, there were reasons to be concerned about putting the plant in Costa Rica. But the government did seem willing to work with Intel without breaking any of its own laws by offering special deals. The prospects at least looked promising. But the next country the team planned to visit, Brazil, seemed potentially to offer a lot more.

Brazil

The site selection team's experience in Brazil was in marked contrast to what had happened in Costa Rica. Brazil's size alone was an enormous contrast: 160 million people in contrast to Costa Rica's relatively puny 3.5 million. Also, unlike Costa Rica's simple, unitary political system, where power was centered in the national legislature and the president, Brazil offered another layer of complexity: it had a federal system. This meant that Intel could pick and choose among Brazil's 26 states for just the right investment deal. Under Brazil's decentralized system, states and even municipalities had some control over taxation policy and could offer individual incentives in order to lure investment. This practice had grown to such an extent that in Brazil it had come to be known as the *guerra fiscal* or "taxation war." Some states had actually driven themselves to the point of bankruptcy in their efforts to compete with other states in offering the most generous exemptions from the state value-added tax, the ICMS.²³

At the federal level, Brazil provided a tax incentive specifically directed toward the computer industry through the *Processo Produtivo Básico* (PPB), or Basic Productive Process law. In order to receive this incentive (which included a reduction of up to 50% of corporate income tax, as well as reductions in some other taxes), companies had to invest 5% of total revenue in research and development. At least 2% of this had to be invested in universities or other government-approved institutions; the rest could be invested internally.²⁴

While the PPB potentially seemed interesting, the fiscal incentives at the state level turned out not to be very relevant. The site selection team had already decided that the best location for a plant would be in the state of São Paulo—where the governor, Mario Covas, had explicitly rejected offering any special tax incentives.²⁵ In any case, the ICMS tax itself would not apply to Intel, since this tax was not levied on exported products.²⁶

Covas's reason for not being generous about incentives was that São Paulo did not need to do much to lure investment. For after Brazil had finally stabilized its economy with the implementation of the *Plano Real* in 1994, billions of dollars of foreign investment were flowing into the country every

²² Interview with Jose Rossi, former Minister of Foreign Trade, San Jose, Costa Rica, November 1998.

²³ I use only the acronym for the state value-added tax here because the full name is quite a mouthful. ICMS stands for *Imposto sobre as operações relativas a Circulação de Mercadorias e sobre a prestação de Serviços de transporte intermunicipal e de comunicação*.

²⁴ Renato Bastos, U.S. Department of Commerce, "Computer Hardware and Peripherals," Industry Sector Analysis for Brazil, São Paulo, Brazil, October 1998, p. 15.

²⁵ Although São Paulo did allow an exception for the computer industry by reducing its relatively high ICMS from 18% to 12% for computer products only, this was still a high rate. See Bastos, p. 15.

²⁶ American Chamber of Commerce-São Paulo, "How to Understand Corporate Taxation in Brazil" (informational pamphlet), São Paulo, 1999, p. 17.

year. And the lion's share of this investment went to São Paulo, the most heavily populated and economically developed state in the entire country.

What intrigued Intel about São Paulo was that the state had already succeeded in attracting numerous high technology firms. In fact, within a couple hours' drive from the capital, the megacity of São Paulo (population: 16 million people), were the much smaller cities of São Jose dos Campos and Campinas. In these cities, hundreds of high-technology firms had already established themselves. São Jose dos Campos was the home of EMBRAER and many other high-technology firms. Campinas, of particular interest to Intel, had managed to attract IBM, Compaq, Hewlett Packard, DEC, and Texas Instruments, to name just a few. Significantly, while São Paulo state did not offer any special tax incentives, Campinas's municipal government did provide them. Specifically, it granted exemption from city property and service taxes for any high-technology companies that established manufacturing plants in either of two industrial parks in the city, both specifically oriented toward high-technology firms.²⁷

Clearly, Brazil had a lot to offer. In terms of *adequate numbers of technical personnel*, there was no question that the numbers in Campinas (home of the famed technological university, the *Universidade Estadual de Campinas*, or UNICAMP) would be far superior to what Intel could find in Costa Rica. *Infrastructure* was more than adequate; electrical power was readily available at reasonable costs, and the airports were already capable of meeting Intel's needs.

But other issues worried Intel's site selection team. *Security* was of some concern; according to some reports, hijacking of trucks in the São Paulo area was on the rise.²⁸ Another concern was *labor unions*, which, while not as powerful as they were in some Latin American countries, could be more militant than those in Costa Rica. In Brazil, all workers paid union dues, whether they were formal union members or not (of Brazil's total workforce, about 20-25% was unionized). A single union represented all workers in a particular industry in a given geographic area. These unions were organized at the federal level into labor federations. The *Central Única dos Trabalhadores* (Central Workers' Union, or CUT), the more combative of Brazil's two principal labor federations, was linked to the *Partido dos Trabalhadores* (Workers' Party, or PT), which controlled some state and municipal governments in Brazil. While workers' base wages were relatively low, overall labor costs in Brazil tended to be higher than in other Latin American countries because mandatory benefits for full-time employees, such as paid vacations, lengthy maternity (also paternity!) leaves, and social security taxes, added 50-80% to the total cost.²⁹

But perhaps the biggest problem that the site selection team encountered in their visit to Brazil was that, after their highly favorable experience with CINDE, and all the personal attention to their concerns lavished upon them from Figueres, Brazilian government officials seemed indifferent to their concerns. Foreign firms were so eager to get into Brazil to get access to its huge internal market that state and national government officials did not need to concern themselves with addressing special concerns of individual corporations—even of an industry giant like Intel. Moreover, on balance, the federal government's policies did not seem all that favorable. While the federal government did offer the specific PPB incentive for firms investing in R&D, it offered no general exemption from corporate income tax—and it had a high rate of taxation.

²⁷ Município de Campinas, Lei N. 8003 de agosto de 1994, in "Incentivos Fiscais do Município de Campinas – SP," provided by Prefeitura Municipal de Campinas, November 1998.

²⁸ Interview with Intel executive, Glendale, Arizona, October 1998.

²⁹ "Brazil: Investing, Licensing, and Trading," The Economist Intelligence Unit (London: The Economist Intelligence Unit), January 1999.

After the Costa Rica experience, all of this left a negative impression. Certainly Brazil did have a huge and very attractive domestic market. But for this particular project, Intel had no interest whatsoever in the domestic market of the country where its plant would be located. 100% of the product manufactured in the plant would be exported.

In addition to the lack of special incentives in São Paulo state, and the required income tax at the federal level, there were still more additional costs associated with doing business in Brazil. There seemed to be numerous other taxes, such as the infamous tax on financial transactions, and other expenses that all added up to what expatriate executives referred to as “the Brazil cost”—the extra cost of doing business in Brazil. Extra costs might be worth enduring if the tradeoff was access to a huge local market. But when a company intended to produce exclusively for export, as in Intel’s case, these costs could be prohibitive. After all, aside from the (at the time) overvalued exchange rate, the “Brazil cost” was one of the chief reasons Brazilian firms themselves had difficulty exporting and why Brazil’s current account deficit was so large.

Chile

After Brazil, the site selection team visited Chile. The team was very impressed with Chile’s modern infrastructure and the country’s technical training programs. But they immediately encountered four problems: distance, labor costs, capital controls, and lack of government incentives.

- **Distance**

The site selection team was struck by the sheer amount of travel time to get from the United States to Santiago, Chile (almost 12 hours, given the scarcity of direct flights). Aware of the number of expatriate executives who would have to be travelling to the plant, at least in the startup phase, the team saw that this could present a problem. Costa Rica, in contrast, was only a three-hour flight from Texas or California.

- **Labor Costs**

One legacy of the dictatorship of General Augusto Pinochet in Chile (1973-89) was a labor code that inhibited the development of powerful, confrontational labor unions. Only about 12% of the workforce was unionized. Unions that included members from more than one company were allowed to engage in collective bargaining only if the company in question agreed to this arrangement—which few companies ever did.³⁰

Partly as a result of these rules, labor costs for unskilled workers were low in Chile, even though the country had one of the highest GDPs/capita in all of Latin America. However, salaries for technically trained personnel, which Intel needed most, were relatively high. The starting salary for an engineer in Chile was between \$30,000-\$40,000—not very different from what it would be in the U.S. Intel could hire engineers in Costa Rica or Mexico for almost half that amount.

- **Capital Controls**

At the time of Intel’s visit in 1996, Chile’s Central Bank had a policy designed to control capital flight during times of market volatility. This policy stated that for portfolio capital investments (*not* for direct foreign investments, such as what Intel planned), investors would be restricted from withdrawing their investment from Chile for one full year. In addition, investors would be required

³⁰ Matt Moffett, “Pinochet’s Legacy: Chile’s Labor Law Hobbles Its Workers and Troubles the U.S.,” *Wall Street Journal*, October 15, 1997, p. A-10.

to deposit an amount, called the *encaje*, equivalent to 30% of their overall investment in a special account at Chile's Central Bank during that time period.³¹

This policy was a legacy of an earlier era, when capital controls were common throughout Latin America. Most Latin American countries had already eliminated this kind of policy, considering it to be counterproductive, in line with the overall "Latin American consensus" in favor of market-oriented policies. Even though Intel presumably would not be affected, since the proposed plant would be a *direct* foreign investment (as opposed to portfolio investment, e.g., investment in the Chilean capital markets), Intel executives were spooked by this policy. One government official was struck with how often the Intel executives brought up this issue, in meeting after meeting.³²

- **Government Incentives**

Beyond these other concerns, the Chilean government simply was not able to offer any significant investment incentives to Intel. Government officials at *Corporación de Fomento de la Producción* (CORFO), Chile's government development agency, explained to the site selection team that the market-oriented "Chilean model" was designed not to interfere with market forces, i.e., *not* to give special incentives for investment in selected industries.³³

CORFO *was* authorized to offer incentives if the investment were to be located in an especially poor region of the country in need of economic development. CORFO officials went so far as to suggest a location for Intel's plant that would meet these criteria, a poor region of Chile not far from Valparaíso. But the site selection team made very clear to CORFO that they did not want to be outside of the general vicinity of Santiago.³⁴

Mexico

The final country on the team's itinerary, Mexico, offered an especially promising location for Intel's plant: the Silicon Valley of Mexico, Guadalajara. The second-largest city in the country, Guadalajara had by the mid-1990s established itself as a center for high technology firms, particularly in the electronics sector. Beginning with Motorola and IBM in the 1960s, hundreds of electronics firms had established plants in and around Guadalajara, the capital of the relatively prosperous Mexican state of Jalisco.

The site selection team was highly impressed with Guadalajara. They talked to a number of executives in high-technology firms, including Motorola and Lucent, which were already there. The *Secretaría de Promoción Económica* (SEPROE), or Jalisco State Economic Development Agency, was extremely well prepared with eye-catching brochures and detailed information that rivaled what the Intel executives had encountered at CINDE. SEPROE, too, prepared a detailed agenda, just as CINDE had done; and the site selection team had plenty of opportunities to speak to several expatriate executives on their own, just as they had done in Costa Rica.

³¹ Technically, the policy still exists. However, currently, the rate is set at 0%—so portfolio investors do not have to put any money in this special account. Some in Chile, and all foreign investors, would like to see the end of this policy once and for all. The fact that the policy still remains, even if the rate is set at 0%, means that a higher percentage could be re-imposed at any time.

³² Interview with Francisco Troncoso, Director, International Relations Division, CORFO, Santiago, Chile, December 1998.

³³ Interview with Mario Castillo, Deputy Director, Strategic Planning Division, CORFO, Santiago, Chile, December 1998.

³⁴ Ibid.

The response from all of the site selection team's interviews was highly favorable about Guadalajara.³⁵ As part of Mexico's fabled "Golden Triangle," infrastructure in the city and surrounding area was more than adequate. The airport's number of flights and capacity was sufficient. Labor costs were low, yet there appeared to be a relatively large supply of skilled engineers and technicians. Finally, energy in Mexico, produced from abundant supplies of natural gas, was relatively inexpensive. As mentioned before, electrical power in Mexico was only about \$0.02 per kilowatt-hour—significantly cheaper than Costa Rica's rate, even after implementation of the ICE's new policy granting special rates to heavy industrial users.

Unlike the indifference the site selection team had encountered in São Paulo, the Jalisco state government was eager to work with Intel. SEPROE officials explained that, in collaboration with the governor of Jalisco (renowned for his honesty and effectiveness), the agency was actively pursuing a strategy of encouraging high-technology investment. It was doing this indirectly by subsidizing numerous technical training schools so that there would be an adequate supply of skilled labor in the region. Also, like CINDE in Costa Rica, SEPROE officials traveled frequently (sometimes accompanied by the governor) to spread the word about Guadalajara overseas and encourage foreign investment by high-technology firms, particularly in the electronics sector. The governor, Alberto Cardenas, was a member of the *Partido de Acción Nacional* (PAN), a business-friendly political party with market-oriented economic views.

SEPROE had a complex formula that it used to determine the number of jobs a company's investment project would be likely to produce, and the capital that the project would bring to the state. On the basis of this formula, SEPROE was prepared to offer Intel free land for the plant's site, and subsidized training for Intel employees for an extended period. But despite all of these positive factors, Intel had two serious concerns.

- **Lack of Government Incentives at the Federal Level**

For all of the incentives the Jalisco state government was prepared to offer at the state level, the federal government of Mexico refused to budge on giving income tax exemptions at the federal level. Also, the extreme centralization of the budget process in Mexico meant that, while the states could provide incentives such as free land and subsidized training for employees, state officials had no ability to offer fiscal incentives of their own, even if the federal government had allowed them to do so. As one top SEPROE official remarked in frustration, "The federal government receives 100% of the tax revenues, but then only redistributes about 20% of that revenue to the states."³⁶

- **Labor Unions**

Mexican federal law also contained certain rules about unions that worried the site selection team. Intel had a policy about not having unions anywhere in the world. But Mexico's federal law stated that if a minimum of 20 employees in a given company decided to form a union, the company would be required to recognize it. If only two employees chose to affiliate with a union from outside the company, the company would be required to recognize and work with that union, provided that it was already recognized by the Mexican labor authorities. However, the workers would have to decide which form of representation they wanted, because only one union was allowed to represent the workers in a specific company. Most workers belonged to unions that were

³⁵ Interview with Ted Telford, Phoenix, September 1998. Information from this section is also based on my interviews with officials at SEPROE, with executives at Lucent, Motorola, SCI, and IBM, and with others in Guadalajara, Mexico, December 1998, and August 1999.

³⁶ Comments by SEPROE official, Guadalajara, Mexico, August 1999.

members of Mexico's nine largest national labor confederations, which had close ties to the dominant *Partido Revolucionario Institucional* (PRI) party.³⁷

Although companies were not required to have unions, in practice union organizers from outside the company would often work with company employees to organize a union or recruit them to affiliate with outside unions. This meant that most large companies in Mexico had to deal with unions, and that the country had a high rate of unionization. Of Mexico's total workforce, nearly 40% was unionized; of industrial workers in companies with more than 20 employees, the figure was closer to 80%.³⁸

Many companies in Mexico ensured harmonious labor relations by working with company unions referred to as *sindicatos blancos* ("white unions"). In some cases, these unions were not really representative of the workers, but served only to comply technically with Mexico's legal requirements. Outside organizers would not be able to come in and form a more combative union (unless a majority of the workers voted for this), because the company would technically already have union representation. Other white unions were more genuinely representative of the workers, but worked in a collaborative way with management. In any case, white unions were much easier to work with than the more combative, confrontational unions that existed in many industries in Mexico.

But even if Intel were able to negotiate an agreement with a white union, this would still go against Intel's worldwide policy not to have unions in its plants. Intel would no longer be able to tell its employees elsewhere that the company had no unions whatsoever, at any plant in the world.

IBM managed to get around this problem at its own plant in Guadalajara by contracting out the majority of its workforce. Although 10,000 people worked at the IBM plant in Guadalajara, only about 500, all non-unionized management-level personnel (engineers and executives), were actually IBM employees. The rest worked *at* the IBM plant but were actually employed by other companies that were contract manufacturers, doing specific projects on a temporary basis for IBM. (Of course, all of these companies had unions.) This arrangement gave IBM flexibility in terms of its payroll, because during times of slack demand it could simply hire fewer contract manufacturers without having to worry about dismissing its own personnel and dealing directly with Mexican labor law issues.

Knowing about these different ways of working around Mexico's labor laws, SEPROE officials told Intel's site selection team not to worry. The company would not need to have a labor union. Intel could very easily be an exception to the general norm in Mexico.

But this very willingness on the part of government officials in Mexico even potentially to make an exception in Intel's case alarmed the site selection team even more. If the rules were not clear-cut, objective, and adhered to in a straightforward manner, then this created an unpredictable, non-transparent environment. This potential for lack of predictability and transparency in the rules of the game was of grave concern to Intel. It smacked of the "special deals" that the company had tried so much to avoid in Costa Rica.

Ted closed the last file and rubbed his eyes. He really had to finish that report.

³⁷ Edward G. Hinkelman (ed.), *Mexico Business: The Portable Encyclopedia for Doing Business with Mexico* (San Rafael, CA: World Trade Press), 1994, p. 15.

³⁸ "Mexico: Investing, Licensing and Trading," The Economist Intelligence Unit (London: The Economist Intelligence Unit Limited), September 1998.