

# Chapter 1

## *Lincoln Electric: The Company, Its Operations, and Its Values*

Lincoln Electric was founded by John C. Lincoln in 1895 and was initially involved in the repair and manufacture of electric motors. The company was incorporated in Cleveland, Ohio, in 1906. When James Finney Lincoln, John's brother, joined the company in 1907, John, the president and innovator, began to devote his efforts to the development and use of welding machines and welding products. James, the vice president of the company, became the general manager and operating head in 1911. In 1914, at the beginning of World War I, James began to demonstrate the advantages of arc welding over riveting for attaching two metals in construction and in manufacturing. Previously, John had used welding as a repair tool, but the war provided an opportunity to demonstrate the superiority of arc welding for the joining of two metals.

Arc welding is a technique in which an electric cable is attached to an electrical motor. At the end of the cable, an electrode is placed; usually it is a wire that is similar to the two metals being joined. The electrode is placed in an appropriate holder. When electricity is passed through the cable to within a fraction of an inch of the metals to be joined, the electricity jumps over the electrode and creates a spark or an "arc." In the process, the electrode melts and flows into the space where the metals are to be joined.

Since those early days, Lincoln Electric has become a world leader in the manufacture of welding products and equipment. It has also produced a whole range of electric motors varying in size from one third to 1,250 horsepower for various niche markets. Welding products include arc-welding machines, robotic welding systems, welding electrodes, welding power sources, welding wire and feeding systems, and environmental systems for handling the fumes from industrial welding processes. Lincoln's products are used for cutting, manufacturing, and repairing metal products.

In 1995, Lincoln's hundredth year of operation, sales exceeded \$1 billion for the first time in the company's history. Net income in 1995 was \$61.5 million. Sales in 1996 were \$1.1 billion, and net income in 1996 increased to \$74.3 million, or 20.8 percent over 1995. In 1997, sales were \$1.2 billion; net income in 1997 increased 15.0 percent to \$85.4 million. For the year ended December 31, 1998, net sales were \$1.2 billion, an increase of 2.4 percent. Net income in 1998, however, increased 9.7 percent to \$93.7 million.

Lincoln operates three manufacturing facilities in the United States—in Cleveland, Ohio (the Ohio Company); Gainesville, Georgia; and Monterey Park, California—and as of December 31, 1998 seventeen manufacturing facilities in fourteen foreign countries. Foreign manufacturing operations currently exist in Sydney, Australia; Toronto, and Mississauga, Canada; Sheffield, England; Grand-Quevilly, France; Rathnew, Ireland; Pianoro, Milano, and Celle Ligure, Italy; Essen, Germany; Mexico City, Mexico; Nijmegen, Netherlands; Andebu, Norway; Shanghai People's Republic of China; Istanbul, Turkey; and Barcelona, Spain. Lincoln has recently added manufacturing capacity in Cikarang, Indonesia. Lincoln had a direct worldwide employment level of approximately 6,400 at the end of 1998.

Lincoln's welding products and welding consumables are marketed throughout the world. In total, the company maintains a worldwide network of distributors and sales offices in 160 countries.<sup>1</sup>

In the United States, the company's products are sold by its own sales force and by independent distributors. In international markets, the company's products are sold primarily by its foreign subsidiary companies. The company also operates an international export sales organization, using company employees who sell products from various manufacturing facilities to mass retailers, agents, distributors, and dealers.

Although Lincoln Electric became a public company in 1995 and is traded on the NASDAQ, more than 60 percent of its shares are owned by members of the Lincoln “family”—descendants of the founders, members of Lincoln’s board of directors, and present and past employees.

## HOW THE FOUNDING VALUES INFLUENCE LINCOLN’S MANAGEMENT SYSTEMS

The company values, which were developed by James F. Lincoln and described in three books that he authored, have had a powerful influence on the design of the management systems at Lincoln Electric. They have also contributed significantly to the company’s agility and long-term success. In James Lincoln’s *A New Approach to Industrial Economics*, the values are stated very explicitly and in considerable detail.<sup>2</sup> These values have had a significant effect on the design of the management systems at Lincoln and have contributed materially to the company’s long-term agility, competitiveness, and success.

At the heart of the company’s values is Christ’s Sermon on the Mount, particularly the golden rule (Matt. 7:12): “So in everything, do to others what you would have them do to you, for this sums up the Law and the Prophets.”<sup>3</sup> James Lincoln attempted to guide the development of the business operations of Lincoln Electric by this rule. He saw no reason why the behavior of other companies could not be guided similarly. He believed the golden rule to be *as natural to the functioning of human nature as gravity is to the functioning of material nature*.

James Lincoln sought to apply the golden rule first to Lincoln Electric’s customers and then to its employees. Stockholders were prioritized third, but he believed that if the golden rule were applied to customers and employees, shareholders would end up in better shape than if the firm attempted primarily to serve stockholders’ interests. In addition, he sought to make employees owners through employee stock ownership programs.

James did not see any final conflict among the three interests, but saw to it that they were congruent with one another, *at least in the long run*. The financial returns to stockholders, reviewed in Chapter 5, demonstrate that Lincoln’s shareholders have indeed enjoyed above-average returns.

From his lifelong study of the Sermon on the Mount, James believed that life consists of relationships. The important relationships were between God and human beings, and between human beings—in other words, life was not to be lived as a “solo performance” but as one in which *right relationships* with God and with others were central to happiness and success.<sup>4</sup>

James also believed that workers should be treated with *dignity* and *respect* and that they should be rewarded fairly and in direct proportion to the value of their work. This was a simple matter of social justice, which led him to devise an *incentive management system* that sought to give labor a share in the output and profits of the company. This share was to be in direct proportion to the diligence, ingenuity, productivity, and cooperation of each worker.

In Lincoln’s overall view of the appropriate relations between labor and management, he saw collective bargaining and governmental support of it as legalized “civil war.” Both labor and management had the same interests: *to serve the customer* and, in the process, to benefit from their work in a fair and just manner. By establishing rules for conducting union–labor conflict, the government was, in a sense, writing rules for “war” between labor and management. Lincoln saw this as counterproductive to an attempt to serve the company’s customers. Although they were never represented in these labor–management negotiations, the customers paid for both management and labor.

Lincoln believed that the Sermon on the Mount had six applications to labor relations:

1. Recognize that workers’ greatest economic need is for income and security in that income, and that both labor and management have the same interests. But the workers’ need for security in income can only be met by satisfying the needs of customers on a continuous basis. *Therefore, the customer is the key stakeholder whose needs are to be satisfied, and this should be done by applying the golden rule in the relations of the company to its customers.* He believed this should be the *goal of industry*.

This goal—as well as the deliberately cooperative relationships among customers, labor, and management—contrasts with the widely accepted view on the economic nature of the firm, as stated by Milton Friedman:<sup>5</sup>

In such an economy [one that is free], there is one and only one social responsibility of business—to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say engages in open and free competition, without deception or fraud. Similarly, the “social responsibility” of labor leaders is to serve the interests of the members of their unions. . . . Few trends could so seriously undermine the very foundations of our free society as the acceptance by corporate officials of a social responsibility other than to make as much money for stockholders as possible. This is fundamentally a subversive doctrine.

2. Achieve the needs of the customer on a continuous basis by staying in touch with and in front of the needs of the customer. This happens when both management and the workforce apply continuous efforts to increasing *quality*, *customer service*, and *productivity*, which in turn provide the customer with new and improved products, higher quality products, and reduced prices. Thus, Lincoln advocated a “cost-based approach” to pricing.

This cost-based approach was (and still is) carried out alongside an effort to continuously improve the quality of the company’s products. Unlike many other U.S. companies, Lincoln Electric did not have to reengineer its production and quality control processes, or establish quality circles, to adopt a *total quality management* (TQM) process. The company has always focused on producing high-quality products at a low cost.

To James Lincoln, the goal was to produce more and more product, at better and better quality, at lower and lower prices, for more and more people. Following his example, the company has always regarded this approach to the needs of the customer as the right and completely natural thing to do.

3. Provide the workers with the most modern tools of production (materials, methods, and machines) and with continuous training and skill development, and encourage them to participate in solutions to all kinds of work-related problems. Besides raising the productivity of the workers and the quality of their work, these efforts also develop their talents and raise their *dignity*, *creativity*, and *self-respect*.

James Lincoln had a very high view of human beings and believed that, with proper management, training, and equipment, there was virtually no limit to the extent to which people could develop. His view on the “unlimited” potential of production workers was a radical change from the thinking of Henry Ford, who built his first plant for the mass production of automobiles in 1908.

4. Achieve continuous cost reduction and pass its benefits on to the customers in the form of lower prices. When combined with continuous increases in quality and the development of new and improved products, the golden rule is fulfilled as far as the customer is concerned.
5. Reward increased productivity, quality, and innovation via a merit system that puts *no upper limit* on what a worker can earn. On the other hand, workers should bear the penalty for lack of productivity, poor quality, absenteeism, and the absence of teamwork in fulfilling company goals. The incentive system should provide strong formal rewards according to variables that matter a great deal to the customer and increase the *economic and social status* of the worker. In the process, the worker becomes an entrepreneur.

When the workers contribute to progress and when a cooperative and trusting relationship is maintained between management and the workers, customers’ needs are fulfilled and continuous employment can be achieved.

6. Recognize that the shareholders deserve a fair return on their investment. James Lincoln differentiated between a shareholder who helps to finance a new operation and one who simply trades shares for gain. Lincoln believed that to the extent a company is already launched and profitable, *a passive shareholder really does not contribute much to its success and is not deeply committed to its customers or its workers*. A shareholder who finances a new venture, however, adds great value and deserves a return commensurate with the risk of the new venture.

Potential conflict with shareholders has been largely avoided at Lincoln because most of the company's stock has traditionally been held by the Lincoln family and by the employees. That is true to this day, even though Lincoln Electric is now a public company. Conflict has also been avoided because the Lincoln philosophy has produced strong financial returns for the shareholders. (The financial returns earned by the shareholders of the company are discussed in Chapter 5.)

James Lincoln had a strong conviction that the concepts in the Sermon on the Mount could be successfully applied in business practice and *had in fact been applied successfully at the Lincoln Electric Company*. The operating values of the company are summarized in Table 1.1.

**Table 1.1** Principal Operational Values of Lincoln Electric

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**Toward the Lincoln Customer**

- Focus on customer service and customer satisfaction
- Focus on high-quality products (including ISO 9000 certifications)
- Focus on cost and price reductions—Guaranteed Cost Reduction Program
- Focus on continuous improvement and innovation

**Toward the Lincoln Worker**

- Strong employee focus
- Dignity of work and of the worker
- Openness and trust between management and workers
- Open-door policy between workers and top management and between middle and top management
- Continuous employment after probation period in domestic operations
- Focus on merit and accountability in performance measurement
- Egalitarian wage and salary structure
- Modest executive perquisites
- Strong focus on challenge, training, and development

**Toward the Lincoln Stockholder**

- Fair return to owners, most of whom are executives, board members, relatives of the Lincoln family, and workers

**Some Problems**

- Difficulty in transferring values to some acquisitions in foreign countries to implement global strategy
  - Some need to phase in and adjust company culture to cultures of acquired foreign companies
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The credo of the company—"The actual is limited, the possible is immense"—is engraved on the wall at the main entrance to the corporate headquarters in Cleveland, Ohio. This short form of the well-developed philosophy of James F. Lincoln supports his view of human nature. My analysis of his writings, especially his book *A New Approach to Industrial Economics*, reveals four assumptions that underlie his philosophy of human nature:

1. Humans have *endless abilities* if we will only recognize this fact and encourage individual development. Humans will then develop a continually greater economy.
2. There is no limit to the development of the human person and human cooperation, because humans are made in the image of their Creator.
3. There are many persons who, because of a greater effort, sparked by a handicap of lack of education, will develop themselves more than educated persons who feel that they have at least partially arrived. Genius is not merely the result of education.
4. The possibilities for humans, through development, are almost limitless. There may be limitations to an individual's possible development, but no one person yet has fully developed all of his or her latent abilities.

The attitude of management toward its workforce is central to workers' development and to the accomplishment of continuous improvement within the company. First and foremost, management must secure cooperative relationships with workers. Lincoln himself instituted numerous devices to accomplish this harmony.

Next, incentives that are meaningful to the workers must be developed. They include the potential for unlimited monetary rewards and promotion, depending on the worker's accomplishments. Financial rewards should represent distributive justice. Workers should receive rewards earned by their own physical strength, motivation, talents, and ability.

Lincoln did not believe that financial incentives were sufficient. Nonfinancial rewards, such as a sense of accomplishment, self-respect, status, recognition, and publicity, were also important—and sometimes more important—than monetary rewards to motivate workers.



Production workers are no different than managers, in this respect, and managers are most effective in bringing forth cooperation when they understand that their staff members have motivations similar to their own.

Nevertheless, formal and informal rewards, are not enough in themselves to bring forth cooperation. Communications must be open, free, and candid between management and labor. All parties must be seen as possessing similar interests. The workers' interests include a constant flow of income, and the managers' interests include a constant flow of profits. The interests of these two groups can only be met when they cooperate in meeting the genuine needs of the customer. Serving the customer is the primary goal of the enterprise, and effective service hinges on providing high-quality products at ever lower prices. Serving the customer also involves being knowledgeable about and solving problems. Sometimes this involves customer education, which, along with service, is the responsibility of the advertising and distribution functions of the company. The function of advertising is to inform potential customers about how the company's products might help solve their problems.

Serving the shareholders was Lincoln's last priority because, beyond providing venture capital to start or expand a business, they contributed little to satisfying the needs of the customer. Shareholders who purchase shares merely to collect dividends and capital gains contributed little to meeting customers' needs. Nevertheless, James Lincoln felt that even the shareholder would be better served if the needs of the customer and the worker were given primacy.

*Continuous employment* was the first step to *continuous improvement of operations*. If employees were laid off as a result of efficiency measures, there would be little incentive to create these efficiencies. And because the production workers are often in the best position to recommend improvements, workers must feel secure in their jobs if they are being asked to provide continuous improvements in operations.

Continuous improvement also requires management to add new tools and machinery to increase the workers' productivity. Every engineering design can be enhanced, every production and distribution method can be bettered, and every material used in production can be improved. Recessions may be used to rationalize and improve operations. Workers should not be discharged during difficult economic times. Their efforts along with those of management during these

inevitable periods should be focused on improving operations and creating new markets.

Additional opportunities for production and sales may exist in new and foreign markets. James Lincoln himself started manufacturing and sales operations in Canada, Australia, and France during his life and tenure as Lincoln's chief executive.

Hours may be cut back so that no one is paid for being idle, but lean times should be used to improve operations and the company's products. Times of prosperity often create slack and inefficiencies that should be removed during leaner times. Thus, Lincoln saw lean times as opportunities to abandon any practices and products that were either inefficient or unprofitable.

Management has several significant responsibilities to the workers: to invest in new tools and technology; to obtain the orders and develop the markets that are necessary to maintain full employment; and, simultaneously, to improve the efficiency of existing operations. Management also has the responsibility for creating a climate of friendly competition among the workforce. As a former football star at Ohio State, Lincoln compared the friendly competitions that should exist in a company with those that exist on well-functioning athletic teams. The objective is to create an environment in which workers can be "stretched" to develop their talents.

### *Lincoln's Values and the Customer*

Lincoln Electric has applied the golden rule to its customers by providing high quality products, a continuous stream of product innovations, strong customer liaisons resulting in strong customer service, and continuous cost reductions that are passed on to customers in the form of lower prices. Over much of Lincoln's 104-year history, its prices have remained fairly constant in nominal dollars despite inflation, except during those periods when the United States experienced very high levels of inflation. To accomplish this and pay its production workers more than twice the average wage of a similar cohort of workers in the Cleveland area has required significant and continuous improvement in employee productivity. Lincoln's history not only is one of continuously improving productivity but also continuously improving the quality of its products.

To further strengthen Lincoln's long-standing emphasis on cost reduction, the company instituted, in 1986, a *Guaranteed Cost Reduction Program* that has become the principal marketing strategy of the company.

Under this program, Lincoln's sales engineers are put through extensive training in which they are taught to understand customers' problems and to propose solutions that guarantee cost reductions if Lincoln's instructions are followed. If cost reductions do not materialize after following the prescribed procedures, Lincoln pays its customer the difference between what was promised and what was achieved. This customer enrichment accounts for the extraordinary loyalty Lincoln enjoys from both its customers and its distributors.

### *Lincoln's Values and the Worker*

The golden rule's direct implications for the treatment of employees are clearly reflected in the company's operational values. Respect for the *dignity* of the worker is key among them. Lincoln's top management is well aware of the role work plays in contributing to the dignity and self-respect of its production workers.

The company is very selective in its hiring practices; "only one applicant in 75 is hired, and half of them leave within 90 days."<sup>6</sup> Nevertheless, until recently, the company employed anyone, regardless of educational level, if the person was believed to have the motivation and ability to do a specific job. At present, a high school diploma is required for employment in domestic operations.

To further promote the dignity of the worker and to improve the operations of the company, Lincoln encourages genuine *openness and trust between management and the production worker*. To do this, top management has established numerous formal and informal arrangements that facilitate open dialogue with production employees. Most prominent among these arrangements is an employee-elected advisory board that meets biweekly with top management to discuss workplace issues and to resolve problems. Creation of the advisory board in 1914 was one of the first actions taken by James Lincoln as general manager. Lincoln said, "[I]f I could get the people in the Company to want the Company to succeed as badly as I did, there would be no problems we could not solve together" (Lincoln, 1961, p. 8).

This openness contributes to a high level of trust between top management and employees. By being so open to the ideas of production employees, Lincoln has encouraged the development of their *rational, managerial, and creative capacities*, which in turn has contributed significantly to the company's agility, competitiveness, and success. "[W]ith very few foremen around, workers must often make decisions on their own."<sup>7</sup>

Application of the golden rule is also seen in the responsibility management assumes for the development of its subordinates. Lincoln seeks to develop the natural capacities of its workers in order for them to assume certain levels of managerial responsibility and accountability. This is in turn reinforced by significant incentives, which focus on production workers' *productivity, cooperation, quality of work, and innovation*.

The golden rule has also led Lincoln to adopt a wage and salary structure in which everyone shares fairly in the company's prosperity and adversity. In 1995, for example, the ratio between the salary of the chairman and president of Lincoln Electric and the total compensation of the average factory worker was 15 : 1. The chairman earned approximately \$900,000, and the average factory worker earned \$60,000. In 1992, the ratio in Japan was 20 : 1 and the overall ratio in the United States was 100 : 1.<sup>8</sup> In 1965, the ratio of salaries of CEOs to the wages of average factory workers was 44 : 1. In 1997, the overall ratio between U.S. CEOs and the average factory worker increased to a ratio 326 : 1.<sup>9</sup> The pay disparity between CEOs and U.S. workers is increasing to alarming levels.

As a result of these salary and wage disparities, the egalitarian pay structure at Lincoln Electric certainly lends substantial credibility to Lincoln's values and contributes to the atmosphere of trust that exists between management and the production workers. It demonstrates that top management is operating equitably in relationship to its employees.

Job security is also a major value of the company toward its employees and that, too, began with James Lincoln (Lincoln, 1961, p. 38). The company *formally* guarantees domestic employees with three or more years' experience at least 30 hours of work per week. In return, employees must be willing to work overtime as required, and if, due to lack of work, an employee is shifted to a position carrying a lesser pay grade, that person must accept the associated adjustment in pay.

The company makes a commitment to the worker, and the worker makes a commitment to the company.

By treating employees with dignity and respect; by providing employees access to top management; by sharing fully with employees the fruits of their labor through salaries, bonuses, and stock purchase plans; and by providing job security, Lincoln is clearly implementing the golden rule with regard to its workers. Through the implementation of these values and the effective development of all its people, Lincoln has developed a skilled and knowledgeable workforce that has allowed the company to build competitive advantage. Lincoln's success is more the result of *the development of its people* than of the company's investment in plant, technology, and materials.

Furthermore, management's strong commitment to employees over the past century has paid dividends in terms of the virtues that have long been observed in the company's workforce. These virtues are presented in Table 1.2.<sup>10</sup> Here is where Lincoln shines: Pride of workmanship is high, and identification with the company is strong. Although the company promotes strong individualistic behavior on the part of Lincoln's employees, it fully recognizes the interdependence of

**Table 1.2** Virtues Encouraged by Lincoln's Management Systems

Lincoln's management systems have encouraged the development of these internal virtues, which are consistent with the Judeo-Christian work ethic:

- Honesty
- Trustworthiness
- Openness
- Diligence
- Creativity
- Ability to manage oneself
- Loyalty to company and customers
- Fairness in the treatment of one another
- Hard-working people whose eyes are on the task and not the clock
- Teachability/Humility
- Accountability
- Competence
- Punctuality
- Cooperativeness—ability to get along with others and build community

its workers and, through the implementation of the golden rule, imposes common moral understandings about how these relationships are to be regulated in the workplace. Nevertheless, the interdependence of operations does sometimes cause trouble among production workers when one or more workers fail to perform their duties efficiently.<sup>11</sup> This always occurs under a piecework system in which there is dependency among employees.

*Lincoln's Values and the Shareholder—  
Adapting to Recent Problems*

Already an international producer and distributor of arc-welding equipment, Lincoln launched into a very aggressive international acquisition program in Europe, Asia, and Latin America, beginning in 1986. Numerous factors indicated that an aggressive international expansion program was overdue:

1. The mature nature of the domestic market.
2. The shifts to offshore production by U.S. manufacturers, including some of Lincoln's customers.
3. The problem of substitutes for steel, such as plastics, aluminum, and concrete.
4. The impact of foreign competition on Lincoln's need to achieve scale economies and remain a global, low-cost producer of arc-welding equipment and consumables.

Lincoln was acquainted with foreign operations. Under the influence of James Lincoln, the company had opened "greenfield" manufacturing operations in three foreign countries. The first of the three operations was established in Toronto, Canada, in 1925. Next, in 1938, Lincoln built manufacturing facilities and established sales offices in Sydney, Australia, to serve the Australian and Asian markets. The third and last expansion during the era of James F. Lincoln occurred in 1955 when Lincoln was invited to start manufacturing operations in France, under the Marshall Plan.<sup>12</sup>

After the death of James Lincoln on June 23, 1965, William Irrgang, a brilliant engineer who had at one time experienced the

terror of Nazi Germany, became president and later chairman of the company. Given his experiences in Europe, he remained skeptical of foreign expansion and sought to serve customers worldwide from Lincoln's plants in Ohio or from the facilities in Canada, Australia, or France. He was firmly opposed to additional foreign expansion. And expansion through acquisitions of domestic competitors was not permissible under antitrust laws in the United States given Lincoln's dominant position in the welding consumables and equipment markets in this country. In 1986, when George Willis became chairman of Lincoln Electric after the death of William Irrgang, Willis immediately signaled the need for Lincoln to begin an aggressive program of international expansion.

Lincoln then began to embark on a program to increase its competitiveness in international markets. To improve economies of scale in its Canadian and U.S. operations, Lincoln acquired, in 1986, the manufacturing assets and product licenses for welding consumables of Airco, US Oxygen's arc-welding operations. These assets were located both in Montreal and in Cleveland. After the purchase of Airco, they were consolidated in Cleveland.<sup>13</sup>

In 1987, Lincoln acquired L'Air Liquide's liquid arc-welding operations in Australia. After the acquisition, Lincoln sold the acquired manufacturing plant and merged its consumable business and sales force with Lincoln's previously established Australian operations. This acquisition resulted in economies of scale in Lincoln's Australian subsidiary.<sup>14</sup>

Lincoln acquired two companies in Brazil—Brasoldas and Torsima—in 1987 and 1988, respectively. They were combined to create one Brazilian subsidiary in Rio de Janeiro. These facilities included a large plant for the production of consumables. Lincoln's purpose in these two acquisitions was to serve Brazil's large market for welding equipment and consumables, an outgrowth of the country's large structural steel fabrication industry. The Brazilian subsidiary also gave Lincoln access to a growing market in Chile.<sup>15</sup>

Construction of a plant in Naraha, Japan (Japan-Nippon Lincoln Electric KK), was completed in 1989. The purpose of this plant was to gain access to the Japanese distribution system, which, at the time, was biased against foreign manufacturers. This, in turn, led Lincoln to sign a contract with 30 welding distributors in Japan. Lincoln was

seeking to gain acceptance of its welding products in Japan's huge building-construction market. Lincoln's strategy was to be the lowest-cost and highest-quality producer of welding equipment and consumables in Japan.<sup>16</sup>

Lincoln completed a new plant for the manufacturing of welding consumables in Venezuela (Venezuela-Lincoln Electric CA) in 1989. This plant was consolidated with the full acquisition of a previous joint venture in Carabobo, Venezuela.<sup>17</sup>

Lincoln purchased Harris Calorific from the Emerson Electric Company in 1992. Harris Calorific (calorific means the science of heat), the oldest manufacturer of gas welding and cutting apparatus in the United States,<sup>18</sup> then became a separate division of The Lincoln Electric Company. The division is headquartered and has manufacturing facilities in Gainesville, Georgia; other facilities are in Pianoro and Milano, Italy; Rathnew, Ireland; and Monterey Park, California. The plants in Italy and Ireland were acquired as a part of a deal between Lincoln Electric and Norweld Holding A/S of Norway.

In March 1988, Lincoln purchased the assets of Armco Mexicana in Mexico City. Armco was primarily an electrode manufacturer. In May 1988, Lincoln acquired Industrias Sigma, a welding machine manufacturer. In 1992, Lincoln purchased Champion International, it produced electrodes, welding machines, and welding wire. These three acquisitions were all brought together in Mexico City.<sup>19</sup>

In 1988, Lincoln entered into a joint venture with Norweld Holding A/S of Oslo, Norway. The initial contract called for Lincoln to own approximately one-third of the joint venture. Norweld manufactured welding machines and consumables. In 1989, Norweld sold its British subsidiary to Lincoln (Lincoln Electric UK) as part of the original agreement. In 1989, Lincoln acquired Lincoln KD SA, Spain, and it became part of its Norweld operations. This increased Lincoln's ownership of the joint venture to approximately two-thirds. In 1992, the company purchased the remaining interests, and Norweld became a wholly owned subsidiary of Lincoln Electric.

Lincoln Smitweld bv, a manufacturer of consumables, with a plant located in Nijmegen, the Netherlands, had been owned by Norweld and was acquired by Lincoln as part of its overall deal with Norweld. By 1991, Lincoln Norweld had become Lincoln's major European subsidiary.



Lincoln's next big move was to purchase, in 1991, the welding equipment business of Meser-Griesheim of Germany (renamed Messer-Lincoln GmbH). The German acquisition was made because the German market for equipment and electrodes was estimated at 40 percent of the entire European market. Lincoln did not have adequate participation in the German welding market and Meser-Griesheim had a 25 percent share.<sup>20</sup> The new company was headquartered in Frankfurt, Germany, and manufactured arc-welding equipment in Volklingen.

Messer-Lincoln GmbH was the most expensive of all of Lincoln's foreign acquisitions. Although exact costs of the purchase of Meser-Griesheim are not available, the notes (especially Note G) to the financial statements contained in the company's *1991 Annual Report* indicate that the purchase price was in excess of \$75 million.

Donald Hastings estimates that the entire foreign acquisition program carried out by George Willis cost \$325 million.<sup>21</sup>

### ***Problems of the Rapid Foreign Acquisition Program***

The acquisition of manufacturing capacity in Germany, Brazil, Venezuela, and Japan did not prove to be a wise decision, and Lincoln rapidly restructured and divested itself of these operations. Lincoln also streamlined and reduced operations in their other European plants. This resulted in operating losses and restructuring charges in 1992 and 1993. The combination of losses on foreign operations and associated restructuring charges led to overall losses (after taxes) of \$23.9 million and \$70.1 million in 1992 and 1993 respectively. Estimates of after-tax losses from this rapid foreign expansion program, including restructuring charges, exceeded \$100 million. The losses in 1992 and 1993 were the first consolidated losses ever recorded in the company's history.<sup>22</sup>

The company encountered a number of difficulties when it attempted to adapt its culture and management systems to foreign operations. In some countries, such as Mexico, adaptation worked very well; in other countries, Lincoln encountered great resistance and consequently faced operating difficulties and financial losses.

The three companies Lincoln acquired in Mexico were not performing well before the acquisition. Lincoln moved a sales engineer from Cleveland to become general manager of the single consolidated company in Mexico City. The general manager thoroughly believed

in the principles of the Lincoln management system, and began implementing principles enunciated by James Lincoln shortly after arriving. In doing so, however, he adapted the practices to the laws and culture of Mexico.

Lincoln's German-made products became noncompetitive as a result of mandated social welfare costs of employment, coupled with rigidities in German work rules and low levels of worker productivity relative to those at Lincoln's U.S. operations. For example, piece rates are not permitted under German law, nor is labor mobility or cross-training of the workforce. Each of these elements plays an important role in creating competitive manufacturing and management systems at Lincoln.

In another oversight, Lincoln was not aware that Brazilian law mandates that bonuses paid to employees for two consecutive years become part of the employees' base wage. This legal mandate severed the link between Lincoln's reward system and the company's productivity in that country. Lincoln also encountered unforeseen and fierce competitive obstacles in Brazil and Venezuela.

Losses encountered in Lincoln's foreign operations threatened the company's loan covenants and, potentially, its financial solvency. The company was in violation of the covenants attached to the loans that were necessary to finance the expansion program.

Shareholder returns were poor for the four-year period from 1990 through 1993. Return on average shareholder equity was a mere 4.4 percent in 1990 and 5.5 percent in 1991, and then fell drastically to minus 19.78 percent in 1992 and minus 22 percent in 1993. Lincoln, traditionally a low-debt company, increased long-term debt to \$250 million and to 63 percent of average stockholder equity.<sup>23</sup>

During these difficult times, Lincoln's workers, particularly those in the Ohio Company (i.e., the two Ohio plants), put forth heroic efforts to further improve domestic operations and thus try to offset the foreign losses that the company had incurred. To boost production it was necessary to identify and eliminate bottlenecks in the Cleveland plants. Once the critical areas were identified "415 people in bottleneck areas gave up 614 weeks of vacation, and some people worked seven days straight for months on end."<sup>24</sup> From 1991 to 1992, productivity of the employees of the Ohio Company, as measured by

*sales per employee*, increased by 6 percent; and from 1992 to 1993, productivity increased by 12 percent.

Lincoln's management, in turn, rationalized its foreign acquisitions, and, as a result, foreign operations turned profitable in 1994 and remained so through 1998 and into 1999. The return on equity (ROE) for the average shareholder since 1994 has averaged approximately 20 percent. This is an excellent return, especially for this industry.

It is important to observe that Lincoln Electric responded quite naturally to this adversity—there was no need for change projects or for reengineering of its operations. The *resilient trust* between management and workers led to extraordinary mutual efforts to respond and correct a very serious problem. The *agility* exhibited by Lincoln in solving this problem was a completely natural manifestation of the human values deeply imbedded within the culture of the company.

We turn now to examine and analyze the management systems that are currently in place at Lincoln Electric.

## NOTES

1. Lincoln Electric Holdings, Inc., Press Release, "Lincoln Electric Posts Record Earnings for 1998," February 3, 1999.

2. See James F. Lincoln, *A New Approach to Industrial Economics* (New York: Devin-Adair Company, 1961). His two other books deal exclusively with the incentive management system instituted at Lincoln Electric. They are *Lincoln's Incentive System* (New York: McGraw-Hill, 1946) and *Incentive Management* (Cleveland, OH: Lincoln Electric Company, 1951). Another book, *The American Century of John C. Lincoln*, by Raymond Moley, is a biography of John C. Lincoln and presents useful background information on the company.

3. New International Version of the Bible (New York: Hawthorne Books, 1962, 1975).

4. This information is adapted, with permission, from James F. Lincoln, *A New Approach to Industrial Economics* (New York: The Devin-Adair Company, 1961).

5. Milton Friedman, *Capitalism and Freedom* (Chicago: University of Chicago Press, 1962), 133.

6. A quote from Richard Sabo of Lincoln Electric, in Section 3, Money & Business, "Royal Blue Collars," p. 12, of *The New York Times* (Sunday, March 22, 1998).

7. Ibid., p. 12.

8. Reported on the *MacNeil/Lehrer News Hour*, June 5, 1992, and reproduced in Kenneth Chilton, "Lincoln Electric Incentive System: Can It Be Transferred Overseas?" *Compensation and Benefits Review* (November–December 1993): 25.

9. *Business Week*, April 21, 1997, and April 20, 1998. Quoted in ExecutivePayWatch, <http://www.paywatch.org/paywatch/index.htm>.

10. These virtues are strongly related to those identified by Max Weber, *The Protestant Ethic and the Spirit of Capitalism*, trans. Talcott Parsons (New York: Charles Scribner's Sons, 1958); by Michael Novak, *The Spirit of Democratic Capitalism* (New York: Simon and Schuster, 1982); and Michael Novak, *The Catholic Ethic and the Spirit of Capitalism* (New York: Free Press, 1993).

11. Section 3, Money & Business, p. 12, *The New York Times* (Sunday, March 22, 1998).

12. Christopher A. Bartlett and Jamie O'Connell, *Lincoln Electric: Venturing Abroad*, Boston: Harvard Business School, Case 9-398-095 (April 22, 1998): 5.

13. The Lincoln Electric Company, *1987 Annual Report*, p. 2, Cleveland, Ohio; and Scott J. Schraff, "Strategic Management at The Lincoln Electric Company" (master's thesis, Cleveland State University, 1993): 26.

14. *1987 Annual Report*, 2; Schraff, 32.

15. *1987 Annual Report*, 2; Schraff, 34.

16. *1988 Annual Report*, 2; Schraff, 32–33.

17. Ibid.

18. <http://www.lincolnelectric.com/corp98/index.htm>.

19. The Lincoln Electric Company, *1988 Annual Report*, p. 2, Cleveland, OH; Schraff, "Strategic Management," 34–35.

20. *1990 Annual Report*, 2; Schraff, 29.

21. Donald F. Hastings, "Lincoln Electric's Harsh Lessons from International Expansion," *Harvard Business Review*, May–June 1999, p. 164.

22. Ibid., p. 163.

23. Ibid., p. 168.

24. Ibid., p. 174.