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## Socio-Cultural and Political Dynamics Associated with Standard Safety Systems Analysis on the National and International Level

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### ABSTRACT

Safety is one of the most volatile areas of management on the corporate level, because of influential ownership requirements and existing socio-cultural and political dynamics. In that regard, national and international corporations routinely must assess the independence of the safety departments within organizations, in order to foster greater balance between internal mandates of productivity and profit margins, and the internal/external realities and needs of people and governments. The degree of their influence may not always be extensive, but all means must be used to encourage the development of safety measures to cope with the pressures and stresses caused by industrialization. Sooner or later, developing countries as well as small businesses will be forced to pay the premium for safety and embrace its tenets wholeheartedly, or risk killing the very source of their productivity: the land, the people, and natural resources.

Conceptually, then, safety departments should in principle function in the capacity of an OMBUDSMAN in order to coordinate and apply constructively all the socio-cultural and political forces influencing safety practices and their enforcement for an optimal level of safety. Since safety is a qualitative value based on a quantitative system of science, and which increases the cost of production, business interests are often naturally not inclined to support such measures. Yet, the qualitative value of safety is directly linked to the quality of the environment. In developed industrialized countries, people are willing to pay a premium for a healthy, hence, safer environment. Because safety is a function of national wealth and the value of human life in society, many less developed countries who believe in this concept can also afford to invest in better safety measures. It is, therefore, the function of the safety engineer or manager to not only adapt modern technology and safety systems to less developed environments, but to inculcate and encourage local interest in developing their adaptive capacity which is best uncovered through the local socio-cultural and political forces on safety engineering and management. Therefore, any or all technological advancements in safety systems function and analysis, must be coupled with education in culture. Areas of study such as Political Science, History, Sociology, Psychology, and Cultural Anthropology, along with a number of other social sciences, are advisable curricula areas, if the field of safety engineering and management is to fully succeed in companies, particularly in less developed countries.

It is, in my view, that safety departments, performing as an ombudsman in the corporation, can properly define the socio-cultural values and their relative position to one another in each society, as a mechanism which can help to structure the organization more effectively and in a

larger sense, more safely. Furthermore, this would make the technology transfer more easy to adapt, because defining the local hierarchy of safety interests allows for a clearer view of matches and mismatches in safety values.

Also, while it is up to the safety engineering and management community to act as a facilitator and advocate of safety, it can only succeed with the proper support and backing of governmental regulatory agencies, both national and international. For this reason, the leadership in the industrialized world must be convinced of the need to develop the safety industry as a "product for future export".

The shift in current American policy may play a decisive role in this area. International pressure for safety compliance measures in developing countries is a growing issue. Such organizations as the United Nations can be of help in monitoring local safety standards in developing countries, but limited funds and no enforcement power makes their leverage limited. Relative to the United Nations, its charter for Human Rights is the basis for its push to improve the safety standards in developing countries. Unfortunately, it is a moral rationale which is not very convincing to those who share a different view point.

It is the hope, then, that all ventures of organized work, societal interaction and group activity, nationally and internationally, emanate from a management philosophy of the economic benefits of safety. However, steady progress to an applied philosophy of respect and dignity of life as well as the culture joins all of this together. This, along with a cooperative government which is formed by people and for the people to give direction and purpose to activity, can achieve a safety policy which will energize the workforce and give vitality to society.

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The purpose of this paper is to present the proposition that safety is a science, a tool of humanity and society, as well as an important variable in the functioning of business, politics and governments. The degree of safety existing in various societies is culturally defined by the local cost-benefit value ascribed to human life in the exploitation of economic resources. Social and institutional attitudes toward labor in relation to management, is strongly related to the historical political development between the "haves" and "have-nots" in each part of the world. For example, the development of commerce and trade, coupled with the mechanization of human production, played a pivotal role in the development of the middle class, called the bourgeoisie.

The growth of the middle class is an essential factor in the evolving demand for safety, because this group has come to represent both sides of the economic equation: management and labor. During the Industrial Revolution of the late 19th and early 20th century, the emerging bourgeoisie were owners exploiting the unskilled and illiterate

low-class. The relation between labor (the lower class) and management (the new middle class and the old rich), was defined by the exploitation of human capital as a non-renewable natural resource. Since the turn of the century, the increased need for safety in an industrial environment was often highlighted and propelled by industrial accidents in the workplace.<sup>10</sup> Large industrial accidents often served to focus legislators on safety concerns and help pass legislation. Invariably, politicians have acted on safety legislation out of moral obligation and/or political opportunism. Because of this, a number of socio-economic ideologies were forged out of the plight of the worker's well-being, and many battles fought.

In the post-industrial era, however, the attitude toward the worker has shifted drastically, as the diametrically opposed socio-economic and political theories have given way to a new reality fueled by technology development, which leveraged the added value of human input: life is to be preserved and enhanced at all levels of the company. As a result, the definition of labor today, includes not only the "blue collar" worker (skilled, semi-skilled, and unskilled labor), but the "white collar" worker (middle and upper-management). All workers today are heavily dependent on machines and equally dependent on the sharing of information to resolve problems and increase productivity at all levels of business. Furthermore, the distinction between upper-management and owners is often blurred in these days of corporate takeovers. In economically developed societies, labor and management are increasingly being valued as one and the same asset: specialized workers with specialized know-how, joined in a cooperative effort.<sup>20</sup> With the age of information, human capital through specialized knowledge has acquired a new, elevated value.

As a result, the socio-economic paradigm in post-industrial societies, has been shifted away from the traditional attitude of pure exploitation with little regard for the social costs, which has driven economic development in the past century. New realities have set in. The globalization of human activity has revealed the interdependence of states and the need for maintaining safe industrial management practices, because of their mutual vulnerability. The Chernobyl nuclear accident is not the most prominent example of the recognized need for greater safety measures among political, scientific, industrial and public groups. The international embarrassment Russia has endured because of Chernobyl elevates the intense considerations of all of society to the reasonable protection of human life as well as the shock of the potential demise of the human race. Consequently, the new socio-economic paradigm on the exploitation of capital, takes an ecological approach. No longer is the quest - man against nature. Industrialization has allowed man to harness nature, to create a safer and more secure environment, ensuring greater probability of survival as a species, and yet, as we contemplate this very issue, today, the costs of industrialization have become blatantly apparent in the pollution of rivers, sea beds, poor urban water quality, etc. Certainly not a Chernobyl, but potentially lethal over time.

The post-industrial paradigm of the 1990s includes to a greater degree, the socio-economic costs of production (i.e. pollution, employee accidents, product liability) in the economic equation. Since World War II, the cost of employee liability to business in the US has progressively increased through legal action by employees, trade associations, and public interest groups. As a result, a measurable cost has been assigned to the exploitation of resources, with the rising premium placed on the value of human life and well-being. A new equation has begun to take shape around this new socio-economic paradigm.<sup>15</sup> The attitude of power governing man's relationship to his environment has shifted from a struggle of man against nature to a struggle of man against himself.<sup>20</sup> Man's ingenuity then becomes a two-edged sword: while it can serve to protect and prolong human life, it also has the potential to poison man's very existence, if the proper safeguards are not in place to protect the public health. Since the population base is the very source of the country's future economic wealth, government and industry see the importance of education and training as the key to economic well-being. In an age of information, technology leverages human capital, giving it a higher value-added.

The growing view in American business and government today, supported by academia, is that the individual must be treated as a regenerative asset, not a wasting asset as in the past. Likewise, the environment is increasingly being treated as an asset to work with, one to be managed rather than purely exploited. This ecological treatment of assets, includes a cohesive cost-benefit analysis of the business. The initial cost investment necessary for proper or better safety and security, is the main hurdle to small businesses embracing safety management practices in the US.<sup>14</sup> Large companies, however, have derived enormous benefits from the enculturation of safety engineering and management practices, as a principle means of reducing potential liabilities and generating employee cooperation and trust. This has been the hallmark philosophy and practice of such giants as Dupont, Johnson & Johnson, General Electric and General Foods, to name a few. For these companies, and many others, enculturation of safety engineering and management practices has yielded significant secondary benefits in the community and the individual families through participation in making safety an important part of daily living. It is just this kind of total commitment and practice which fulfills the human need for a better quality of life.

Safety for big business today, includes not only protecting its fixed assets and their continued operation, as well as its financial liquidity and base, but the mental and physical health of its human capital.<sup>7</sup> The current health care debate, for example, revolves around how the costs of health care will be shared by diverse interest groups in American society. The cost sharing percentage between employers and employees for health care, is a hotly debated issue most vocally opposed by small business groups, which claim the added financial burden would

bankrupt them. In the end, however, the United States will have some form of portable and universal access to health care. Among health care specialists, preventive maintenance is recognized as the most significant contribution to cost reduction. However, note that any new national health care reform must include a culturization in our society to think and act health. This concept is a practicing one in the area of safety as well. Therefore, is the health care reform proposed significantly planned to change behaviors to grant it success or will it be a financial disaster and a criticism of society when evaluated at some future time? May we, then, apply the same argument to safety as a practicing philosophy today by some?

The safety and security of the worker by definition, determines the safety and security of the company and its continued prosperity. For this reason, business has been inclined to develop the skills and education of its employees to keep up with the technological tools which have become indispensable in managing business today. Adapting workers to a fast changing technology has become most problematic and a challenge for both business and government, because the rapid obsolescence of knowledge has made the individual obsolete in the work place without retraining. Access to education and job training has, thus, become another important emerging value among government, business, and public interest groups in the US.<sup>12</sup> Like health care, this is a form of preventive maintenance for the worker's economic well-being. If work necessitates specialized knowledge, access to the knowledge must be made available.

An extension of safety and security of the worker worldwide, is the heart of the emerging discipline of ergonomics.<sup>2</sup> Ergonomics is involved in designing man's environment, by examining the person-machine relation and creating a healthier, less stressful surrounding.<sup>10</sup> It is in this new area of accommodating the value-added asset, the worker, in the work milieu in order to facilitate the human physical and mental capacity to produce an increased yield and financial gain. It must be a truly gifted interdisciplinary trained safety engineer or manager who can view work stations with a diversified human workforce to allow for corporate goals to be achieved. We have reached the age when we don't have to fit one mold or function to be productive and still maintain a good to excellent safety performance. It will take some special safety engineer or manager in the future to allow that to become an every day reality.

The underlying axiom of this post-industrial paradigm, is that the individual be treated as a resource to be actively cultivated, not just exploited by society and its leadership. The result is a combination of these two values. Japan's corporate promise of life-long job security for its workers, for example, is an essential reason for the country's corporate cohesion and economic success. While the Japanese model is not necessarily superior to the American model or European model, it is the cultural contrast in their structural exploitation of economic assets, particularly human capital, which makes them com-

petitive with one another. The free exchange of information regarding management practices and their costs and benefits, has pushed American society to find its own cultural solutions to its socio-economic problems. On one hand, there is a minimum of safety and security necessary to foster economic opportunity for those who want it, while on the other hand, there is the need to encourage those who are reluctant or discouraged to work, because of lack of self-esteem, education, training, mental or physical well-being, and/or opportunity to change. Adaptability to a changing environment has always been an essential function of human survival, and is a value which is deeply ingrained in American society and culture.<sup>15</sup>

The role of the modern state has traditionally been one of providing economic opportunity to its members, as well as encouraging the development of its human capital through government, business, non-profit, and philanthropic interests. Today, it seems the key to a healthier (safer) social and economical environment depends on the successful integration of individuals in society whenever possible. Conversely, successful integration depends on the individual's access and incentive to change and adapt. For society, successful adaptation of the individual means the creation of a productive, self-supporting member of society, who with time may learn to support others (i.e. family, friends, etc.). This is the underlying notion of the social "safety net" provided by the modern state. By highlighting the importance of the adaptive function as a primary component of safety engineering and management, the central notion of safety engineering and management as a facilitator of both qualitative and quantitative potential in the creation of product and exploitation of capital, becomes more apparent.

Despite the many benefits derived from systems engineering and application to business productivity, the idea of a "managed" national industrial policy in the United States is treated as a foreign "socialist" notion, most often associated with Europe. As a result of traditional American distaste for governmental control and vocal opposition to active governmental economical management, the US has effectively pursued a reactive industrial policy without orientation and purpose, often with erosive economical results for the country. The recent changes in the government's approach to management, is supported by the growing literature in systems management engineering, calling for a greater coordination of resources to produce an optimal result: whether it be managing natural resources and its industrial by-products, like water and waste water, human capital (education and training), or information.<sup>12</sup> The optimal result is the point of equilibrium among the host of quantitative and qualitative choices, where most needs are satisfied until new ones arise. Thus, the standard is no longer just a quantitative measure, but an optimal combination of quantitative and qualitative values. The safety component is an important factor for the inclusion of qualitative values in social and economic cost-benefit calculations of business and government, as well as their constant reassessment and upgrading.<sup>9</sup>

The underlying purpose and objective of safety engineering and management is to safeguard as best as possible organization's tangible and intangible assets, in order to guarantee the entity's survival and future existence.<sup>10</sup> An organization's assets include tangible values: the physical infrastructure (buildings, machines, employees, equipment, etc.), institutional structure, and financial assets; and intangible values: information, trade secrets, human ingenuity, personality, shared purpose, loyalty, trust, etc. A number of professions have arisen separately over the years, to provide the proper checks and balances for safety engineering and management of companies: security management, accounting and auditing, personnel, building and equipment maintenance, employee health care, etc. There is a pressing need in American business today to consolidate these often separate and unrelated departments, under one roof head by safety engineering and management specialists with a multi-disciplinary background including the social and political sciences. Only by expanding the basic values of safety engineering and management to each of these institutional components and applying their lessons, will organizations learn to adapt and survive in a rapidly changing environment driven by an explosion in technology.<sup>16</sup>

Clarity of purpose among each of these controlling functions is helped by outlining the safety and security measures needed to protect the asset for which each department is responsible. Organizational unity and cohesiveness, thus, is further achieved, because each department uses similar means of establishing a standard or optimal level of safety to assure continued survival. The success of safety engineering and management and its approach to systems development and practice, depends completely on the degree of support from senior management and from the mission statement or philosophy of the company as well. Experience has shown that companies that have adopted safety engineering and management measures, have benefited from enormous cost savings, by limiting their potential liabilities.<sup>19</sup> Although the role of the safety engineer and manager has historically centered on controlling hazards in the workplace, the knowledge and lessons derived from the field have slowly found their application in other disciplines related to the management of an organization.

The role of safety engineering and management is defined by the asset that it is assigned to protect.<sup>10</sup> As noted above, the notion of safety engineering and management transcends all aspects of organizational management, and is an essential component in measuring costs and benefits when seeking to increase profitability and productivity of the organization and at the same time function within a supportive governmental system as well as within the socio-cultural indicators of the society. Therefore, senior management must understand the value of safety engineering and management not only as a cost saving measure, viability, whether tangible or intangible. The difference in business cultures domestically and internationally, can be accounted for by the different corporate assets they safeguard by force, through legislation

and judicial rulings, or by preference, through the corporate philosophy expressing the structural valuation of the organizational assets and their relative value to the firm's productivity and profitability.

The Japanese approach to business, for example, highlights labor as its primary corporate resource. The full potential of human capital is to be cultivated, so it may be exploited. In Japanese companies the personnel department plays a key role in maintaining the company's continuity. It is more important than research and development, marketing and even the executive office. Few realize that the loyalty so admired in Japanese companies, is the product of the personnel which fosters these relationships.<sup>16</sup> Through the human work force, then, are generated the valued requirements of corporate departments.

In Japan, the personnel department does all the company's hiring, while in the West personnel is usually delegated just the paperwork or running interference for line managers, who actually make the hiring decisions. Likewise, in Japan, worker evaluations are primarily done by the personnel department through assessments, which scrutinize employee potential, performance, communication skills, facility for teamwork, industriousness and outside interests.<sup>16</sup> This allows for extensive employee evaluation in terms of past performance and evaluations, and bosses' assessment. Discrepancies allow for the evaluation of the employee on past performance and potential capacity, thus, protecting employees from vindictive bosses. A powerful personnel department prevents the harmful divisions of a company into little fiefdoms of corporate power. The placement power of the personnel department allows it to actively cross-train employees for the company's own future benefit, which develops the employee's own added-value potential in the process. In Japan, bosses are short of the power to discipline or dismiss their subordinates summarily, and instead must find positive measures to motivate them. Employees are taught and indoctrinated into company practices and philosophy by the personnel department. In this manner, employees learn the need to work for a common good (or goal), to appreciate the value of personal growth, and to remember the importance of maintaining consensus. The power of orientation within the organization comes from instilling group spirit and camaraderie in each "class" through training programs and team activities, as well as through department and corporate-wide events, honors, and information.<sup>16</sup>

The unity of purpose of the Japanese model highlights human capital as the most cost-effective natural resource to cultivate and exploit. In contrast, American employees are treated by business as a disposable asset easily replaced or bought. Safety in American business is principally defined as protecting (maximizing) corporate earning potential from liabilities incurred in the production process. The emphasis on corporate profits in the American business culture, is balanced by the social safety measures which have arisen over the past century,

to protect employees and the general public from industrial accidents and hazards, as well as to provide a minimum level of public health and welfare. Protecting the individual and public welfare from industrial and business interests through the process of legal redress, has forced business to invest in safety despite its initial costs. Since these costs are inevitably passed on to the consumer, the cost of living can be assumed to include the cost of safety necessary for the efficient and cost effective exploitation of capital.

The American model values individual initiative and problem solving capacity, fostering an environment of open competition which is the hallmark of American culture. This attitude is quite apparent in the American corporate culture today, where all employees are advised to be constantly searching for new job opportunities and the burden of self-improvement is squarely placed on the employee's shoulders. Even the welfare system devised as a safety net in the US does not actively seek to develop human talent and productivity and financial independence, but supports individuals indiscriminately, regardless of their actions and consequences. At present, the welfare system has built-in incentives discouraging recipients from seeking work. This denies them of the primary means of resolving their predicament, as well as the value and dignity of work for developing self-esteem and independence. In other words, the system saves life by setting a minimum standard of living, but fails to promote or help develop human capital (individuals) through education and/or training. American business has only slowly come to recognize the economic benefits of developing their human capital, despite the initial cost of investment.

The individualism which marks American culture, however, makes it more difficult to ensure employee loyalty to the company. Large companies often complain about the cost of training individuals who leave and go to competitors. Clearly the question in American culture always boils down to who pays how much for a minimum quality of safety necessary for continued productivity.<sup>11</sup> Invariably, business is reluctant to invest in preventive measures because of the initial cost, particularly when it comes to developing its human capital. The demands of American society today reflect an increasing awareness of the need to find measures to protect individual health concerns, which threaten or impair an individual's capacity to optimize their productive potential. Education, training, and apprenticeship programs are viewed today by both government and business as key to a vibrant and productive work force.<sup>8</sup> Access to new technology, however, will be essential to the enculturation of much of the American work force. Welfare reform is also promised. Likewise, there are different tactics utilized by the management of national resources under government auspices.

The new policy in the US is that safety pays in the long run by providing a healthier environment for the individual and society, as well as a whole industry which

will only grow with the industrialization of less developed areas. In sum, the assumption is that industrialization in less developed countries like Mexico, will at one point trigger the need to protect the environment or risk poisoning the land and its human capital, effectively destroying the country's economic resources and potential. According to Lori Wallach, Director of the Trade Program at Ralph Nader's Public Citizen Organization in Washington D.C., "The trade rules let corporations decide the 'hows' and 'wheres' by taking away countries' abilities to regulate corporate behavior to promote non-economic values such as community and democratic control, environmental protection, worker safety and who will do the producing and growing. NAFTA restricts the United States, Mexico and Canada from putting most social or environmental priorities ahead of trade liberalization."<sup>22</sup> This is the reasoning behind a much needed NAFTA mechanism of sanctions for enforcing environmental and labor safety standards in the host country.<sup>6</sup> NAFTA, therefore, is as poorly formulated in providing worldwide safety responsibility as the General Agreement on Tariffs and Trade (GATT) is, which was created in 1947. In fact, Wallach articulates in her comments quite clearly how a secretive trade tribunal would not think twice about putting trade before environmental concerns or member nation interests. The US government must be interested in developing its safety engineering technology at home, for exporting into industrializing countries like Mexico. America, particularly, must put pressure on its southern neighbor to maintain or raise minimum standards of safety through a combination of treaty language and United States/Mexico governmental intervention. Over time you would expect standards to rise progressively with economic development, but, again, only if the institutional capacity to enforce safety measures is available and used.<sup>6</sup> Critics must realize that enforcement of safety legislation is not only the problem of less developed countries, but is often a major problem for the US Government oversight, which may include a significant cost if effectively carried out. This is our obligation if we are to insure synergism and homeostasis in the world on all fronts.

Optimization of individual and collective safety involves a trade off of costs and benefits to society. The empowerment of the individual through technology has not only made human capital more valuable by increasing the value of labor, but has also leveraged the power of the individual in relation to the existing socio-economic systems. Thus, the public has become more vulnerable to the harmful effects of individual discontent. On another scene, the incidence of violence in the workplace has increased drastically in recent years, as a growing number of disgruntled discharged employees have retaliated against the perceived culprit by sabotaging equipment, physically threatening corporate facilities or employees, and stealing corporate assets. Today, the individual's unparalleled access to technology and information has magnified the individual's potentially harmful impact on society. In the US any deranged and unresourceful individual can buy a gun, shotgun, or semi-automatic, enter

a fast food restaurant in California or take a commuter train in New York, and indiscriminantly kill, maim and wound dozens of innocent men, women and children.

Conversely, a resourceful and clever individual or small group purposefully directed has the potential to seriously damage or undermine the safety of American society. The success of the safety measures designed to prevent against such threats depends in large part on the effective design and implementation of safety procedures and coordination among overlapping agencies. This is clearly demonstrated by the newly implemented agreement between OSHA and the EPA whereby violations of OSHA rules, identified in an EPA audit, are provided to OSHA and violations of EPA rules, identified in an EPA audit, are provided to OSHA.

These failures in security safety systems demonstrate two important conditions about safety. First of all, it shows that safety measures are limited and constrained by the socio-political values of the culture. Secondly, it demonstrates the difficulty of imposing certain safety management practices and procedures which conflict the socio-political values of the society.<sup>10</sup> As a result, and drawing from an array of examples provided in this paper, safety engineers and managers must not only be trained in the various parameters of safety, but must be fully conversant in assessing and evaluating the cultural environment in which they operate. Understanding the operating principles of a culture is essential if safety management systems are to be transferred and adapted to the new environment. Some cultural factors are as obvious as the physiognomy and work customs of the local population.<sup>2</sup> For example, an American production facility and its safety standards implicitly use certain constants in American society in their formulation: average height, education and literacy, chain of authority, and a certain degree of initiative. In a developing country, these standards cannot be assumed to be the same in an environment where the work force is smaller than the average American, literacy is lower, and workers are trained to strictly follow orders rather than taking the initiative. Clearly, the job of the safety consultant, engineer, or manager is not only to formulate standards of safety for operations, but includes the ability to translate and adapt the imported standards to local cultural practices.<sup>2</sup> The success of technology transfer (which includes safety systems) depends in good part on the local capability to sustain this foreign system. Invariably, this involves compromising the original standard and retrofitting it to fit local conditions. Unfortunately, such critical factors like plant maintenance and infrastructure are often taken for granted by systems engineers, who without the proper understanding of the cultural condition inherent in technology transfer, will fail to produce optimal condition for production and safety.

For this reason, and for very serious consideration for review by our colleagues in academia, it is essential that the safety engineer and manager be versed in multiple areas of safety and socio-cultural-economic factors. A

commitment must be made, therefore, to change degree requirements for our safety engineers and managers to reflect the socio-cultural-political milieu, if they will ever have independence, qualification and perform as an ombudsman on the national and international safety scene in the future.

By understanding the cultural context in which a system is to operate, engineers and managers can better assess and design the most effective system and modifications thereof. Aside from identifying the local cultural factors which will directly impact the safety and production of capacity of the organizations, safety engineers and managers can most easily understand how to adapt technology to a different environment, by evaluating the socio-economic values of the local business culture. For example, in Japan economic productivity is driven by its active development of human capital and constant search for group consensus and well being. In this case, safety is a natural ally of the desire to develop human resources. Conversely, in the US, economic productivity is driven by the active development of financial resources in the form of increased profits. In this case, safety has emerged as a counterbalance to rampant exploitation for purely economic gain. Because of the high premium placed on individual initiative as the primary vehicle for economic development, safety measures are imposed by society to restrain individual activities which incur an excessive cost on society. In Russia, the system is based on safeguarding the continued existence of socio-political leadership. Because labor plays an important role in the socio-economic ideology, trade unions have historically played an important role in providing information about needed occupational safety, health, or environmental legislation, which is subsequently worked out by the state.<sup>17</sup>

Understanding the historic valuation of the elements of production in any given society will go a long way in helping safety consultants and engineers define safety and security systems in foreign cultures. Furthermore, by understanding the fundamental socio-economic and political differences among cultures, systems engineers and managers can translate and adopt technology and operational systems more effectively. In this manner, foreign cultural elements can most effectively be identified, and safety programs adapted to local conditions. By clearly distinguishing the cultural components which conflict in the transfer of technology and know how, safety engineers and managers can not only more effectively adapt foreign processes to local demands, but also sell more effectively the concept of risk management.

Safety engineering and management are in the business of promoting safety education, safety analysis, risk management, and the like. In fact, safety engineers and managers are marketers of a system which best ties together human and product needs. Because safety engineering is a process of integrating the relative safety priorities of each business into an integral whole; understanding the socio-cultural context, in which each business is established, is essential to its future success and

survival. Safety management, including engineering and human behavior programs, must be fitted and placed in context of the socio-political milieu of the country rather than assume the standardization of total safety practices is internationally acceptable without deviation. Taking this approach is most important for developing the field abroad, because it openly acknowledges cultural differences and offers local managers a tool to best maximize the resources under their command.

Teaching businesses the value of developing their human capital as the best means of increasing profits and encouraging socio-economic development, is an important lesson which safety engineers and managers can share with their counterparts in developing countries. Furthermore, safety engineering and management must be understood as a modern tool designed to help business to adapt and protect itself in a fast changing environment. This applies to any entity or resources which managers are interested in developing. Business is always interested when it comes to accepting methods which will insure future survival. This must be the main thrust of safety management in approaching the executive direction of a corporation. Without proper support and authority from senior management, safety engineering and management would be an ineffective tool.

The success or failure of safety engineering and management depends in large part on the society's institutional and economic capacity to sustain and maintain a certain level of safety and security in development. Industrialization and development are a constant balance between competing goals: the need to produce and exploit resources, and the need to protect individuals from the ill effects which occur in the production process. Although there exists a number of safety mandates put forward by OSHA and various association' guidelines, each emphasizing the value of human life and human performance, developing countries are not likely to endorse each measure, if only because of their limited financial resources and enforcement capacity. The role of international organizations such as the United Nations must be supportive in terms of providing information and specialized expertise, but will remain relatively ineffective as enforcers of standards, unless they actively assist in raising funds to help these countries to invest in the new technologies and apply them fairly and respectfully. At best, the international agencies more likely will be facilitators of the management approach to economic development.<sup>4</sup>

Only when developing countries begin to understand that developed countries maintain a higher standard of living because of the safety premiums paid in these countries, will they come to understand the value of optimizing the productivity of all of its resources, by investing in all of them, not just the cheapest. By understanding the greater return achieved by investing in the more elastic commodity under exploitation, developing countries will slowly come to realize the high return potential of its dormant human capital, and the reasons for investing and protecting it.

In other words, only with the proper nurturing of a society's own human potential, can societies best succeed and survive in a highly competitive economic environment. It is for this reason that government has the mandate to impose rules on society, as it serves as the best guarantee for survival of the culturally defined group it represents. The socio-economic health of a country is best described as maintaining an optimal balance between the quantitative and qualitative investment in and exploitation of its natural resources, which allows for the maximum profit defined by local cultural values.

It is the task of the safety engineer and manager to help institutionalize these cultural values through rational safety systems which take into account local realities without lowering safety standards. By assisting governments and businesses in developing countries in the practical application of safety engineering as a formative tool of state-building, safety engineers, managers, and consultants can help institutionalize the necessary controls, safeguards, and investment measures for balanced economic development and growth. No doubt, the internationalization of safety engineering and management will bring a host of new ideas and solutions to the problems of enculturation inherent in technology transfer. Safety engineering and management are simply the best tool designed to maximize each country's socio-economic potential. Those who fail to appreciate the value of the safety component as a necessary cost of any technology, are bound to pay for it in the end, either with their lives or those of their descendants. Likewise, safety engineers and managers who fail to understand and exploit the cultural component of safety priorities in different societies, are bound to fail in their mission.

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