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ABSTRACT

The value of strategic planning for educational, business, governmental, and family institutions to make them more responsive to society and to insure their viability is addressed. The transition from an agricultural to an industrial society and then to a technological one can be described in terms of its impact on individuals, institutions, and society itself. Strategic planning and management matches results of an assessment of an external environment with the results of auditing internal strengths and weaknesses. In the case of large institutions, strategic planning and management requires the capability to collect and analyze a broad range of demographic, social, economic, and political data in order to develop a most likely scenario of their future. The process should assist institutions to capitalize on strengths, minimize weaknesses, take advantage of opportunities, and eliminate or reduce threats. It helps individuals understand their stage of development and formulate professional and personal goals in relation to an image of the future. As the technical, information society evolves, it is essential that institutions analyze the work culture and develop plans for intellectual capital formation. (SW)

STRATEGIC REPORT

STRATEGIC PLANNING AND MANAGEMENT FOR THE "THIRD WAVE" SOCIETY

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BACKGROUND STATEMENT

Dr. Warren H. Groff is Vice President for Academic Affairs at North Central Technical College, a state assisted two-year institution with approximately 1,900 students located in Mansfield, Ohio. In his present position, Dr. Groff provides leadership in a comprehensive institutional planning process and chairs a Task Force on High Technology for the Chancellor of The Ohio Board of Regents.

His background includes six years as a public school teacher, three years of administration and one year of teaching courses in higher educational administration in the College of Education at Temple University; three years consulting to a USOE Regional Educational Laboratory, The American Board of Pediatrics, and the Southeast Region of the Governor's Justice Commission of Pennsylvania; 2½ years as Academic Dean/Vice President for Academic Affairs at Sacred Heart College in Belmont, N.C.; and 2 years as Executive Director of a Health Education Consortium in Northwest Ohio involving the Medical College of Ohio, Bowling Green State University and The University of Toledo. He is completing his 6th year in his present position.

Dr. Groff has made numerous presentations on planning before various associations, including the Society for College and University Planning (1978); the Education Section of the World Future Society (1978) and the World Future Society (1980); American Technical Education Association (1980); the National Alliance of Post-secondary Education (1981); Council for Interinstitutional Leadership (1981); the American Association of Community and Junior Colleges (1981); the National Technology Transfer Conference (1981); the Ohio Academy of Science (1982); and the National Council on Community Services and Continuing Education of AACJC (1982).

Dr. Groff served on the National Conference Committee of CAUSE as a program track coordinator in 1979, 1980, and 1981. Dr. Groff is the past president of the Technical Education Division of the Ohio Vocational Association and received its 1981 Distinguished Service Award. He received a Nova University Practitioner Hall of Fame Award for a paper on "Human Resource Development" in 1979, a second award for a paper on "Evaluating the Extent to Which an Institution Reaches Stated Goals and Objectives" in 1981, and a third award for "Building Futurism Into An Institution's Strategic Planning and Human Resource Development Model" in 1982. He was one of two faculty at the Snowmass Institute on Strategic Planning and Management in 1981 and 1982 and has been invited to repeat the workshop in 1983. He assisted in conducting an American Council on Education Leadership Seminar on "Strategic Planning Techniques for Massachusetts Postsecondary Education" for the newly created Massachusetts Board of Regents in December 1981 and conducted numerous workshops on strategic planning for several of the above-named organizations, the National Center for Research in Vocational Education (1982), and the National Council for Resource Development of AACJC (1982)

He has written extensively in the fields of human resource development and strategic planning and management.

Dr. Groff received his Bachelor's Degree from Millersville State College, Masters in Education from The Pennsylvania State University and his Ed.D. from Temple University.

STRATEGIC PLANNING AND MANAGEMENT

FOR THE "THIRD WAVE" SOCIETY

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STRATEGIC PLANNING AND MANAGEMENT

FOR THE "THIRD WAVE" SOCIETY

ABSTRACT

Numerous authors have described the transition from an agricultural society to an industrial society and on to a post-industrial, technical, technetronic, information society. Each of these society's has its own set of unique characteristics. In a similar manner, the transitional "passage" between two stages of development can be described in terms of its impact on individuals, institutions, and society itself.

Institutions and individuals alike need a conceptual framework to assess a variety of forces in order to see opportunities and threats in their external environment as well as a way to audit their internal strengths and weaknesses. This "open system" conceptual framework is called strategic planning and management. Strategic planning and management is, essentially, a process of matching results of an assessment of an external environment with the results of auditing internal strengths and weaknesses. In the case of institutions like hospitals, colleges and universities, business and industry, churches, and government, strategic planning and management requires the capability to collect and analyze a broad range of demographic, social, economic, and political data in order to develop a most likely scenario of their future. The process should assist institutions to capitalize on strengths, minimize weaknesses, take advantage of opportunities, and eliminate or reduce threats.

In the case of individuals, it should help persons to understand their stage of development and the formulation and revision of professional and personal goals in relation to an image of the future.

What is fundamentally different about this period of time is the scope and rate of change of contemporary science and technology and its impact culturally, psychologically, socially, and economically. The technetronic, information society will have profound impact on the personal ethos or "space", on the workplace environment, and on relationships among institutions of society.

Human resource factors have accounted for 80% of the productivity growth in the U.S. since 1929. As the industrial society continues to recede and the technical, information society evolves, it is absolutely essential that institutions of society analyze the work culture and develop plans for intellectual capital formation. It would appear incontrovertible that maximum synergism is achieved when individual futuring/developmental systems are in harmony and synchronization with institutional futuring/developmental systems.

STRATEGIC PLANNING AND MANAGEMENT FOR "THE THIRD WAVE" SOCIETY

THE THIRD WAVE

> A new civilization is emerging in our lives and blind men everywhere are trying to suppress it. This new civilization brings with it new family styles; changing ways of working, loving, and living; a new economy; new political conflicts; and beyond all this an altered consciousness as well. Pieces of this new civilization exist today. Millions are already attuning their lives to the rhythms of tomorrow. Others, terrified of the future, are engaged in a desperate, futile flight into the past and are trying to restore the dying world that gave them birth. [1]

* * * * * * * * * * *

The Maturation of Society

In The Third Wave, Alvin Toffler describes periods of society using the analogy of waves as indicators of societal change. The first wave was an agricultural society. The second wave was an industrial society. The third wave, the current one, is a technological society. Toffler elaborates on the turbulence created as one wave rolls in and another recedes through the examination of social, political, and economic forces.

Prior to the agricultural wave, humans lived in small, migratory groups and attended to their needs by foraging, fishing, and hunting. The agricultural wave began roughly ten millennia ago. "It crept slowly across the planet spreading villages, settlements, cultivated land, and a new way of life."[2] Land was a predominate value with people living in multi-generational households in small, scattered villages. A simple division of labor emerged of clearly defined castes and classes in a rigidly defined authoritarian structure with birth determining one's position in life. The economic force most prominent was what Toffler calls the "prosumer," that of most individuals consuming all which they produced.

Toffler estimates that the industrial society began about 1650-1750 and ended by 1955. Six underlying principles of this society are (1) standardization,

(2) specialization, (3) synchronization, (4) concentration, (5) maximization, and (6) centralization. A fundamental change in family structure evolved, a shift to a "nuclear" or two-generational family unit; grandparents and other relatives were left behind as families "streamlined" toward urban centers in search of work in the factory. The division of labor, hierarchial structure, and metallic character of the factory were incorporated into other major institutions of society. The economic force that emerged was a shift from essentially self sufficient people and communities to "a situation in which the overwhelming bulk of all food, goods, and services was destined for sale, barter or exchange.... Everyone became almost totally dependent upon food, goods, and services produced by someone else."[3]

Toffler anticipates that the technological society, which will complete itself in the next few decades, will bring about a new way of life which is an anti-industrial society. Toffler foresees a major change in family structure and role, an electronically expanded family which will include relatives, friends, and colleagues in a "family cooperative." The cooperative will operate a small business based primarily in the home or "electronic cottage" away from urban centers because of locational flexibility provided by technology. Toffler identifies principles that will guide the political structure of the future as (1) minority power as evidenced in a demassified society, (2) semi-direct democracy through representing oneself, and (3) a break-up of the decisional logjam with the result that decisions would be made at the level where they belong. The economy of the technological society is envisioned as a balanced producer/consumer relationship with the producer consuming both goods and services s/he produces and those produced by others based upon a number of factors such as increased leisure time, cost/benefit, and personal satisfaction.[4]

Additional comment is appropriate about the character of each type of society and the rate of change. In the hunting and agricultural societies, mankind was concerned primarily with extracting things from nature. The transformation to the agricultural society was slow and based on rather simple technological innovation. The hunting and agriculture societies can be characterized as interactions between people and nature. In comparison, the transformation from the agricultural society to the industrial society occurred more quickly and was the result of technological advances in energy, transportation, communications, raw materials, and research and development networks. The industrial society can be characterized as interactions between people and goods or fabricated nature. More recently, advances in the industrial society have been the result of the integration of macro-technological systems, the aggregation of complex technological developments in each of the above mentioned networks.

During recent years we have experienced the onset of a transformation to a new type of society. Masuda indicates:

> Mankind is now entering a period of transformation from an industrial society to an information society.... Man is now standing at the threshold of a period of innovation in a new societal technology based on the combination of computer and communications technology, quite unlike any of the past. Its substance is information, which is invisible. This new societal technology will bring about societal transformation which, in a double sense, is unprecedented.[5]

This transformation to the information society is concerned with the shift from physical productivity of material goods to information productivity and can be expected to bring about fundamental changes in human values, in trends of thought, and in the political and economic structures of society. This learning and information society will be characterized as interactions between people and ideas and knowledge.

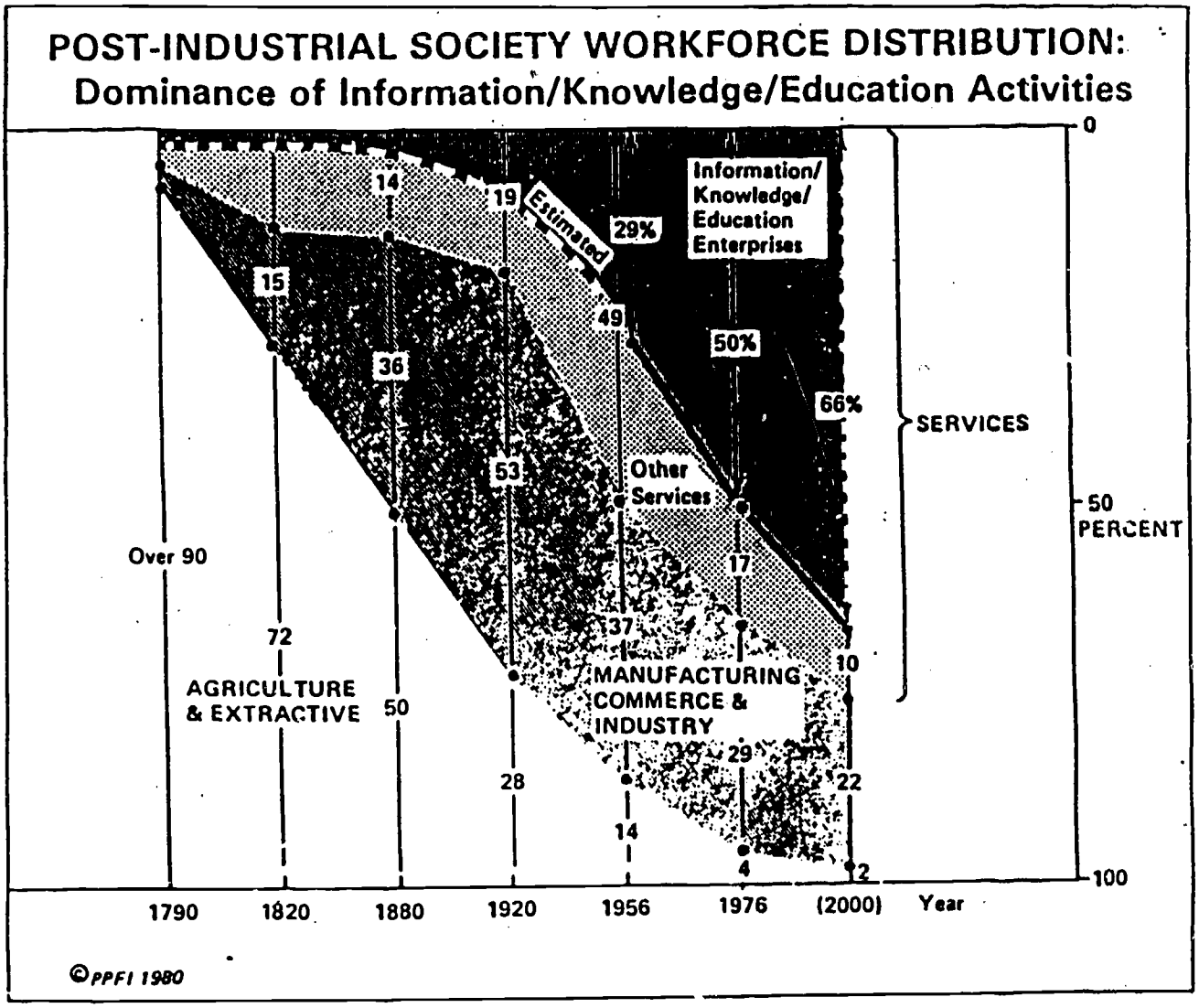
Molititor describes the transition from one type of society to another in terms of the workforce.[6] He indicates that in 1920, 53% of the American workforce was employed in manufacturing, commerce, and industry; 28% of the workers were engaged in agriculture and extractive industries; and 19% were employed in information, knowledge, education, and other service enterprises. By 1976, 29% were in manufacturing, 4% in agriculture, 50% were in information, and 17% were in other service occupations. By the year 2000, 22% are predicted to be in manufacturing, 2% in agriculture, 66% in information, and 10% in other services. (Figure 1)

Choate indicates that the compositon of America's workforce has changed significantly in the past four decades as a result of basic structural changes that are underway in the American economy.[7] (Figure 2) He indicates past change is mild, however, compared to what awaits us.

Boulding indicates that we are maturing toward a "vintage" society. He states:

> The maturation of our society, for good or for ill, will dominate change during the next decades. In biological organisms, senescence or death is inevitable when the biological potential of the original cell is exhausted. This does not have to happen in social organizations, or even total societies, because these structures are capable of a kind of social recombinant DNA. One sure sign of impending death for an organization or society is a fixed, uncritical worship of old ideas and ways that prevents adjustment to new situations. A society can restore its potential by replacing the old with the young in role structures and by developing "visions," renewals, and expansions of its original ideas.[8]

The changing nature of society has tremendous implications for its institutions for they are "of society." That is to say, institutions are created to fill a role that society has deemed necessary as it relates to its well being. Viewed in this light, the family, religion, elementary and secondary education, postsecondary education, human services, government at all levels, business and industry, housing, and transportation must develop mechanisms to impact on the quality of life to insure their viability. Strategic planning and management is a process which is being used by numerous institutions of society in an attempt to make them more responsive to the needs of society and insure their viability.



The distribution of workers in different sectors of the American economy changed dramatically over the last century, as society evolved from agricultural to post-industrial. Some important turning points were 1880, when 50% of the workers were in agriculture; 1920, when about 50% were in manufacturing; and 1976, when more than half were in information industries.

Source: Graham T. T. Molitor, "The Information Society: The Path To Post-Industrial Growth", The Futurist (April 1981) XV, No. 2 p. 24

Figure 2

THE CHANGED FACE OF AMERICA'S WORK FORCE

Sector	1940	1980	Percent Change
Agriculture	9,540,000	3,310,000	-65.3
Nonagriculture	32,361,000	90,564,000	179.8
Construction	1,311,000	4,399,000	235.5
Finance*	1,485,000	5,163,000	248.0
Government:			
Federal	996,000	2,866,000	187.7
State, Local	3,206,000	13,383,000	317.4
TOTAL	4,202,000	16,249,000	286.7
Manufacturing	10,985,000	20,300,000	84.8
Mining	925,000	1,020,000	10.3
Services**	3,665,000	17,90[illegible]000	388.4
Transportation, public utilities	3,038,000	5,143,000	69.3
Wholesale, retail trade	6,750,000	20,386,000	202.0

*Including insurance and real estate

**Including personal and business

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C. Computed by the New York Times, May 1982.

Strategic Planning and Management

Definition. Strategic planning and management is, essentially, a process of matching results of an assessment of an institution's external environment with the results of an institution's internal environment. Institution as used in this definition is generic and could mean a single agency, a statewide system, or a societal institution such as organized religion, postsecondary education, or the health care delivery system. Strategic planning and management requires the capability to collect and array a broad range of demographic, social, economic, and political data, both historical and projective, in order to anticipate trends. It requires an analytic capability to audit or diagnose strengths and weaknesses of the institution and match them with opportunities and threats in the institution's external environment. The process of strategic planning and management should be to assist institutions to capitalize on strengths, minimize weaknesses, take advantage of opportunities, and eliminate or reduce threats.

Several persons have written about strategic planning and management based on their experiences in the health care delivery system and in the postsecondary education system.

In the American Hospital Association's Trustee Peters states:

> Strategic planning is a process that directs an organization's attention to the future, thereby enabling the organization to adapt more readily to change.
>
> The major contribution of the planning process to good management is the rationality it imposes on an organization's efforts to anticipate its future.
>
> Creative organizations are able to examine the basic assumptions under which they operate and to adapt them to new situations. Creativity is a basic tool for good planning and not some poetic appendage to the process.[9]

In the American Hospital Association's Hospitals Thieme states:

> Real strategic planning does not start with assumptions about institutional mission. Mission can only be realistically set after a careful assessment of the external environment and the internal strengths and weaknesses of the institution and after identification of practical options.[10]

Ross states:

> Planning is no more than a conscious, rational process of deciding upon a desired future state and commiting resources to achieve it. When speaking about planning, it is necessary to differentiate between informal planning, which everyone does, and formal strategic planning. Even the most unsophisticated manager gathers and organizes data, makes assumptions about the specific universe, establishes goals and objectives, and sets priorities for activity. Informal planning differs from formal planning in that in the first case the manager makes the decisions alone. The informal plan lacks a multidisciplinary perspective, and has no rigorous methodology.[11]

In an issue of the Community and Junior College Journal Ellison states:

> It is within the framework of strategy that annual budget planning and preparation take place. Alfred D. Chandler, in his business history Strategy and Structure, defined strategy as "determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals." Strategic decision-making is concerned with the long-term health of an organization rather than with day-to-day operations. Also, a strategy is not in force until an institution has made a resource commitment to support carrying out the strategy.[12]

Collier indicates there are five essential elements in the strategic planning concept:

1. Strategic planning involves the explicit consideration of a set of decisions which determine the future of the entire organizational entity.

2. The total strategic planning process is comprised of the initial strategy formulation process (in which the set of strategic decisions are made) and the implementation/budgeting process (in which the initial strategy is reformulated and an emergent strategy evolves).

3. One of the primary criteria used in making strategic decisions is the achievement of a simultaneous match among (1) the organization's resources, (2) its proximate environment, and (3) certain inherent characteristics of the organization.

4. Strategic planning encourages organizations to take the initiative in creating for themselves.

5. The set of strategic decisions should be synergistic and they should increase organizational flexibility.[13]

Thieme suggests there are seven key objectives of the strategic planning process:

1. Challenge the prevailing assumptions about the role and purpose of the institution.
2. Identify service area needs that are not adequately met.
3. Develop a plan that recognizes both external and internal realities.
4. Achieve consensus among key organization members on future strategies.
5. Favorable influence the perspective of internal and external constituent groups.
6. Link strategic planning to operational management.
7. Educate key people as to the external and internal realities as well as to the values and aspirations of key groups.[14]

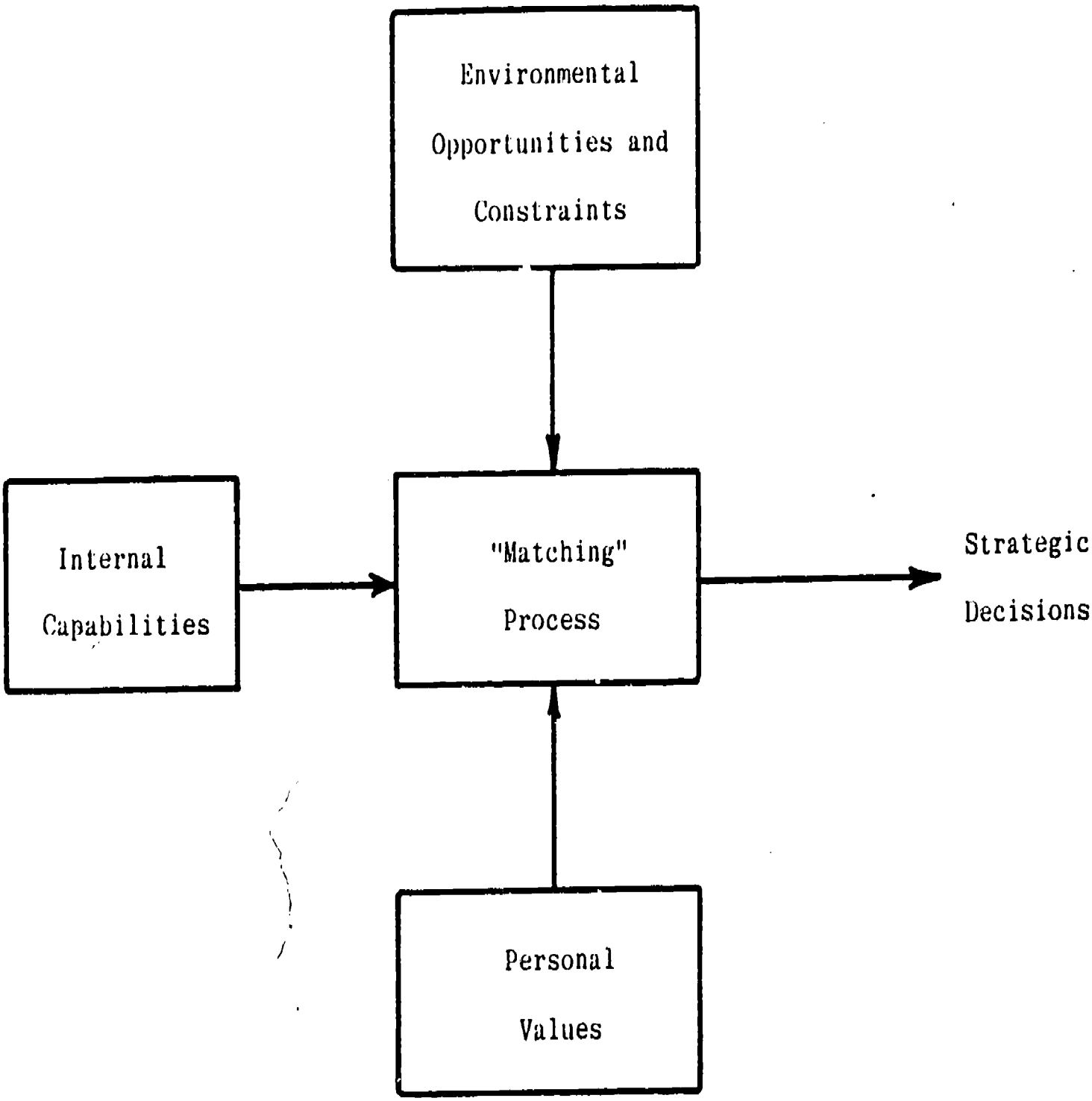
Shirley and Caruthers specify six strategic decision areas as (1) basic philosophy and values, (2) goals and objectives, (3) program or service mix, (4) clientele, (5) geographic service area, and (6) comparative advantage.[15] They detail each area in order to indicate how administrative and operational decisions take their direction from strategic decisions. Three major determinates of an organization's strategy consist of (1) external opportunities and constraints, (2) internal capabilities, and (3) the personal values of key constituencies. Strategic decisions grow out of a matching process of a critical analysis of what the organization (1) might or cannot do, (2) can do, and (3) wants to do. This model is displayed in Figure 3.

Cope states that "strategic planning assumes an open system in which organizations are dynamic and constantly changing as they integrate information from turbulent environments. Strategic planning focuses on the external environment, on qualitative information and intuitive decisions regarding resource commitments, and on integrated, participatory involvement."[16]

Tools. Tools for assessing an institution's external environment include (1) needs assessment, (2) market analysis, (3) environmental scanning, and (4) trend analysis. Ahmann indicates that needs assessment is a generic term to

Figure 3

THREE MAJOR DETERMINANTS OF AN ORGANIZATION'S STRATEGY



* Robert C. Shirley and J. Kent Caruthers, "Strategic Planning for Higher Education," presented at the annual meeting of the American Association of State Colleges and Universities, November 20, 1979.

describe a process "for determining the discrepancy between existing and desired levels of attainment with respect to specific educational goals."[17] He describes types of needs assessment and the state of the art which has shifted from informal to formal, systematic efforts beginning in the early 1970s attributable primarily to the accountability movement stimulated by federal legislation. Vlahos traces several changes in needs assessment techniques including its application to perceptions of the community and business and industry.[18]

Market analysis consists of obtaining detailed information about markets or market segments served or unserved by the institution. Market analysis is an organized effort to identify the relationship between specific wants and needs of people and the way the institution meets or could meet them. Market analysis is, in its simplest description, a more coherent way to plan institutional responses to conditions within the institution's service area based on a coherent plan of research, strategy, and communication.[19]

Environmental scanning consists of periodic sampling of data which may ultimately form the foundation of trends. An example of such a scan is the College Entrance Examination Board study indicating that 36 percent of the population between the ages of 16 and 65, more than 40 million Americans, are in a career transition status.[20] Research by the College Board, however, indicates that only about 1/4 of the 58,400,000 persons in postsecondary education are enrolled in colleges and universities.[21]

Trend analysis consists of the systematic review of comparable data over time in order to determine direction.

Variables. Institutions and systems need some way to monitor demographic, economic, social, and governmental planning variables in order to develop the most likely scenario from among the possible alternative futures. Demographics provide

a good example. The Global 2000 Report to the President indicates that the world population will increase from 4.5 billion in 1980 to 6 billion by 2000.[22] In 1980 some 800 million people lived in conditions of absolute poverty; by the year 2000, their number could grow by 50 percent. The President's Commission for A National Agenda for The Eighties found four basic ways in which American families and households are different now from what they were in the 1950's:

1. There has been a substantial rise in the number of single-person households.
2. The elderly comprise a growing percentage of the total population.
3. There has been a significant increase in the number of single-parent families.
4. There has been a dramatic rise in the percentage of married women who work in the labor force.[23]

Demographic data about family composition in the U.S. are interesting. One of four white Americans is young, while one of three black Americans and one of two Hispanic Americans is young. Another important statistic is the fact that 38% of white American families have school age children while 66% of Hispanic American families have school age children. These statistics are U.S. averages and do not reflect geographic variations. Data about the number of high school graduates between 1979 and 1995 will range from a decline of almost 60% in Washington, D.C., to an increase of almost 60% in Utah. Eleven states will experience a decline of more than 30% in the number of high school graduates during that span of time.

The point of this discussion is straight forward. The world, with its nations and its institutions, is in the turbulent times of a shift from an industrial society to a post-industrial or technological society.[24] Brzezinski refers to this time as the technetronic society in his book Between Two Ages.[25] Institutions must identify variables which relate to and help to refine their

mission and collect and analyze data to chart a course of action. The United Methodist Church, for example, recently announced a program to develop 250 new churches each year of the 1985-88 quadrennium and to assist approximately 2,500 churches in critical need of revitalization due to "weak programming, population shifts, economic changes, the pastoral appointment process and depressing self-image."[26] This represents but one example of the need for data to support the strategic planning process.

Aggregate categories of data about the external environment include (1) demographic trends, (2) economic trends, (3) social indicators, (4) governmental planning, (5) technological advances, (6) changes in the workplace, (7) energy requirements, and (8) value shifts. Sample subcategories for the first three of the above-mentioned groupings are displayed in FIGURE 4.

Visions and Scenarios. The purpose of collecting and analyzing data is to develop the most likely vision or scenario from among the possible alternative futures based on historical and projective information. There is growing recognition that Toffler's "Third Wave" technological society holds the potential for the evolution of a humanistic, holistic, person-centered society and that computerization can assist in the development of that scenario.

In developing a vision or scenario, it is useful to have a conceptual framework around which to organize the information that results from the collection and analysis of technological, demographic, economic, political, and social data. Bell states:

> Analytically, society can be divided into three parts: the social structure, the polity, and the culture. The social structure comprises the economy, technology, and the occupational system. The polity regulates the distribution of power and adjudicates the conflicting claims and demands of individuals and groups. The culture is the realm of expressive symbolism and meanings. It is useful to divide society in this way because each aspect is ruled by a different axial principle. In modern Western society the

FIGURE 4

SAMPLE SUB-CATEGORIES FOR SUGGESTED DATA CATEGORIES

EXTERNAL ENVIRONMENT		
DEMOGRAPHIC CHARACTERISTICS	ECONOMIC TRENDS	SOCIAL INDICATORS
Population Size	Textile Industry	Population & The Family
Age Distribution	Auto Industry	Health & Nutrition
Sex Ratio	Electronics Industry	Housing & The Environment
Marital Status	Telecommunications Industry	Transportation
Ethnic and Cultural Characteristics	Health Care Industry	Public Safety
Education Levels	Agriculture Industry	Education & Training
Economic Status	Airline Industry	Work
Population Density	Energy Industry	Social Security & Welfare
Degree of Urbanization	Steel Industry	Income & Productivity
Racial Composition	Insurance Industry	Social Participation
Unemployment	Shipbuilding Industry	Culture, Leisure & Use of Time
Poverty & Deprivation	Biotechnology Industry	
Illiteracy	Aerospace/Space Industry	
Existence of Basic Community Services	Defense Industry	
Social, Political, Economic Well Being	Synfuel Industry	
	Mining Industry	
	Education Industry	

> axial principle of the social structure is economizing -- a way of allocating resources according to principles of least cost, substitutability, optimization, maximization, and the like. The axial principle of the polity is participation, sometimes mobilized or controlled, sometimes demanded from below. The axial principle of the culture is the desire for the fullfilment and enhancement of the self. In the past, these three areas well linked by a common value system (and in the bourgeois society through a common character structure). But in our times there has been an increasing disjunction of the three and this will widen.[27]

Bell states that the post-industrial society can more easily be understood by five more specific dimensions. They are:

1. Economic sector - the change from a goods producing to a service economy;
2. Occupational distribution - the pre-eminence of the professional and technical class;
3. Axial principle - the centrality of theoretical knowledge as the source of innovation and of policy formation for the society;
4. Future orientation - the control of technology and technological assessment.
5. Decision-making - the creation of a new "intellectual technology."[28]

The computer is seen as a major tool in the development of this technological, person-centered society. Masuda describes four developmental stages of computerization based on the use of computers at the levels of (1) big science, (2) management, (3) society, and (4) the individual. The big science stage took place in the period between around 1945 and 1970 and had a focus on "the state" making extensive use of the computer in large scale projects such as national defense and space exploration. The second stage of computerization had a focus on management-based computerization in both government and business and took place from around 1955 to about 1980. In about 1970 computerization advanced into the third stage, society-based computerization, in which the computer will be used for the benefit of society as a whole. In about 1975 computerization entered its fourth stage of individual-based computers, the beginning of the high mass knowledge creation society. Masuda indicates "that these four stages cannot be a series of mere successive developments, but each stage will

continue developing even while the succeeding stage is coming into being."[29]

Because education is essential in the technological society, several quotations are cited which help to provide direction for that scenario. Francis Keppel, former United States Assistant Secretary of Health, Education and Welfare, talks about The Necessary Revolution in American Education. He states:

> The first revolution in American education was a revolution in quantity. Everyone was to be provided the change for an education of some sort. That revolution is almost won in the schools, and is on its way in higher education. The second revolution is equality in opportunity. That revolution is under way. The next turn of the wheel must be a revolution in quality.[30]

Willard Wirtz indicates that we are in a revolution which is linking more closely the world of work with the world of education, a process of integrating the "learning to do" system with the "doing to learn" system.[31]

In Accent on Learning, K. Patricia Cross suggests the revolution is from "educational opportunity for all" to "educational opportunity for each." She cautions "a 21st century goal of maximizing the impact of education on individuals is infinitely more complex and more demanding than our 20th century goal of providing access for all...."[32] Hunter and McCants elaborate on the challenge. They state:

> ...dissonance within the teaching/learning interaction, like electrical resistance, lowers the efficiency of learning and eventually lowers the probability of student achievement. Certainly if instruction is designed to produce learning, educators will need to find ways to improve the match between the way instruction is delivered and the preferences of its clients...multiple path instruction must be developed with full recognition of the learners' identified cognitive and noncognitive factors.[33]

Cognitive styles mapping, learning styles inventories, and hemisphericity tools can contribute to the revolution in delivery system formats.

Leslie uses Toffer's The Third Wave to develop an educational institution in a technological society dominated primarily through electronic media.

She states:

> This methodology would allow the learner to proceed at his/her own rate and style, within his/her own time period, at his/her desired location, drawing upon learning materials from throughout the country and the world. Computer science and electronics courses and programs of study would be an integral part of the curriculum. Faculty would be cross-trained in a variety of disciplines and teaching styles. They would have flexible work schedules and loads and might share an assignment with a spouse or colleague. Many faculty would instruct from their home or electronic cottage....[34]

All institutions must develop some way to collect and array information to clarify fuzzy images of alternative scenarios. Some sort of conceptual framework is useful in arraying the information about the "third wave," post-industrial, technetronic, computer literate, high technology, information society.

Brzezinski states,"The paradox of our time is that humanity is becoming simultaneously more unified and more fragmented."[35] His "technetronic" society is shaped culturally, psychologically, socially, and economically by the impact of science and technology. Scientific and technical knowledge is becoming a major source of contemporary change. In the industrial society technical knowledge was applied primarily to the acceleration and improvement of production techniques with little thought to the social consequences. In the technetronic society, scientific and technical knowledge is enhancing production capabilities but also affecting almost all aspects of life directly. Reliance on "new techniques enhances the social importance of human intelligence and the immediate reliance of learning. The need to integrate social change is heightened.... Science thereby intensifies rather than diminishes the relevance of values...."[36]

Person-Centered Strategic Planning

The unprecedented infusion of new technology into the workplace holds the promise of new industries with new jobs, of more creative work, of a more productive society, and of a society with more equality among its participants. Unfortunately, the application of technology in a different direction will cause legitimate and widespread concern. What is fundamentally different about contemporary technology is its scope and its rate of change. It must be remembered, however, that the application of technology is but one path of development. It is a product of human decisions. The central question is how it will affect society and whether people will be the beneficiaries or victims of science and technology. What is needed is a conceptual framework to guide our institutions in such a way that we focus science and technology on the individual and quality of life issues. As a recent commencement speaker noted in his opening statement, "It may seem contradictory, but in this age of satellite communications, computers, robotics, and fiber optics, the individual matters more than ever."[37]

Stages of Human Development. All persons pass through various stages of early development beginning with fetus, newborn, infant, toddler, preschool, school age, and adolescence. These stages of development are described in medical, psychology, and educational journals. More recently, stages of adult development received attention from White,[38] Could,[39] Chickering,[40] Levinson,[41] and were popularized by Gail Sheehy in her book Passages.[42] These efforts were paralleled by studies to match tasks, program responses and outcomes sought for the various stages;[43] a search to the key to each generation's prejudices, values, and ways of reacting to change;[44] career life planning;[45] professional development and obsolescence;[46] the dynamics of matching individual and organizational

needs;[47] and direction for lifelong learning.[48]

These studies have contributed greatly to our understanding of the individual and how persons function in institutions and society. Many of these documents, however, focus on a rather static definition of environment, be it an individual's personal ethos or the workplace environment. Ethos is the concept of "space" and includes the disposition, character, characteristics, and distinguishing attitudes, habits, beliefs, etc., of an individual or of an ethic, political, occupational, or other group. Ethos deals with the integration and synthesis of the six dimensions of wellness: (1) occupational, vocational; (2) intellectual; (3) nutrition, physical fitness; (4) emotional; (5) ethics, spiritual values; and (6) social, family, community, and environmental. The implications of the impact of the automated-information society upon ethos or space is one of the most compelling issues that must be managed in the transition from the industrial society to the technical society.

Career Planning. Career planning is an example to illustrate the impact of technological change on ethos or space. Choosing a career or changing to a new career is one of the most important and difficult decisions a person makes. The difficulty is attributable, in part, to the lack of awareness of occupational choices available now and those which might be available in the future. Another difficulty is the absence of diagnostic tools to assist persons to identify specific aptitudes, interests and abilities which provide them personal and professional satisfaction. A study by the College Board found that 36 percent of Americans, 40 million persons, between the ages of 16 and 65 are now undergoing or anticipating job or career change.[49] More than half of these Americans expect to return to some form of education or training to help them advance their careers or to change to new careers. In addition, the research evidence indicates clearly that adults have different counseling and instructional preferences by developmental stage.[50]

If we apply this background to technological advances in one field, telecommunications, we begin to get a feel for the magnitude of one aspect of the human resource development issue which must be managed if individuals are to benefit from our advances in science and technology. The shuttle that went up on November 11, 1982, carried private satellites that will be used for teleconferencing and high speed data transmission. Developments in the field of telecommunications will lead to a number of occupations such as:

1. Computer Terminal Information Processor
2. Computer Terminal Distributive Information Processor
3. Telemarketing - Advertising Technician
4. Telemarketing - Sales Programmer
5. Telemarketing - Camera and Audio Recording Technician
6. Telemarketing - Consumer Order Specialist
7. Telemarketing - Operations Analyst Technician
8. Telemarketing - Sales and Shipping Clerks
9. Teletext - Cable TV Liaison Technician
10. Teletext - Marketing Specialist
11. Teletext -Software Technician
12. Teletext -Librarian
13. Teletext -Broadcast Communications Technician
14. Teletext -Operations Supervisor
15. Teletext -Interactive Correspondent Technician
16. Teletext -Senior Editor and Operations Director[51]

These new occupations could begin to absorb persons displaced from occupations which are being phased out due to obsolescence or other reasons. Unfortunately, formal systems do not exist to systematically monitor the advances in research and development and interpret their impact in terms of the human resource development requirements necessary to make the occupation become an operational reality. Our educational and human services systems are more reactionary than proactive with regard to this phenomena.

Illiteracy. The onset of a transformation to a new type of society is occurring at a time when illiteracy is a major problem in this nation. Numerous articles have been written in recent years about the growing number of functionally incompetent,[52] scientific illiterate,[53] and the growing illiteracy problem

for business when employees lack reading and writing skills necessary for their work.[54] An article in the Boston Sunday Globe indicated that it is scandalous that Johnny and Janie cannot write when they enter college, "but it is perhaps less scandalous than the possibility that, when they emerge as bachelors of arts or science, they may be unable to describe either discipline in acceptable written English."[55] The magnitude of the problem is such that "one in five American adults (20 percent) is functionally illiterate -- unable to read job notices, fill out job applications, make change correctly, shop, locate needed services, or understand even basic concepts pertinent to their lives such as insurance and banking" (Figure 5)[56] The problem is compounded when to these forms of illiteracy are added (1) occupational illiteracy, (2) economic illiteracy, (3) research illiteracy, (4) management systems illiteracy, (5) information processing illiteracy, and (6) technologic illiteracy. The largest single challenge for this nation in the information society deals with managing the issue of intellectual capital formation.

Figure 5

ADULT FUNCTIONAL LITERACY*

Skill or Knowledge Area	Functional Literacy Levels** (Percent of Adult Population) Level I	Level II	Level III
Skill:			
Reading	22	32	46
Writing	16	26	58
Computation	33	26	41
Problem Solving	28	23	49
Knowledge Area:			
Occupational Knowledge	19	32	49
Consumer Economics	29	33	38
Government and Law	26	26	48
Health	21	30	48
Community Resources	23	26	51
Overall Competency	20	34	46

*Adult functional literacy is not simply the ability to read or write at some arbitrary level. Rather, it is the ability to apply skills that are central to an adult's ability to function effectively in contemporary society. The study from which this information is drawn defined 65 requirements for functional literacy. The study was based on five national surveys of American adults.

**Level I adults can function only with great difficulty because of inadequate mastery of the requirements for functional literacy. Level II adults are functional but not proficient. Level III adults are proficient.

SOURCE: Norvell Northcutt, Adult Functional Competency, Industrial and Business Training Bureau, University of Texas, 1975.

Institutional-Centered Planning

Stages of Development. Research indicates that all organizations pass through various stages of growth and development. One widely utilized view of the developmental sequence represents evolution progressing from small to integrated to diversified. A number of writers have suggested stages beyond the three-stage model. Steinmetz proposes a four-stage model consisting of direct supervision, supervised supervisor, indirect control, and divisional organization.[58] His labels deal with methods of control, thus he focuses directly on the need for changes in style at various stages of development.

Greiner describes five stages each with its own management style to achieve growth (1) creativity, (2) direction, (3) delegation, (4) coordination, and (5) collaboration.[59] Between each stage a particular crisis is posited, thus requiring a style change. These crises involve first leadership, then autonomy, then control, and finally a participative style of mutual goal setting through a matrix of teams. James has a somewhat different concept of the organizational life cycle by focusing more on the problems faced at each phase of evolution; his five stages include (1) emergence, (2) growth (3) maturity, (4) regeneration, and (5) decline.[60]

The concept of stages of corporate development for computer/data processing activities has been described by Nolan as (1) initiation, (2) contagion, (3) control, (4) integration, (5) data administration, and (6) maturity.[61] The phases of evolution leading to corporate strategic decision making have been described as (1) financial planning to meet the budget, (2) forecast-based planning - predict the future, (3) externally oriented planning - think strategically, and (4) strategic management - create the future.[62]

It is becoming increasingly clear that the strategies an organization uses are influenced by its position in a developmental sequence. All of the models emphasize the style and strategy changes associated with growth and the problems

associated with these changes. Organizations at different stages of evolution tend to elicit different managerial and organizational styles. This will often mean that those who led the organization at one stage may not be able to do so effectively at another. In the first stage an organization requires a single guiding executive who basically operates a "one-person show." Such executives tend to be rather authoritarian, to emphasize short term thinking, and to have an operating orientation. In the second stage a group of managers with functionally specialized responsibilities replaces the single authoritarian executive. Thus, the chief executive must be able to work with members of the management team and utilize their talents effectively. The move to other stages is accompanied by a divisionalized structure with loose control over the operating units while stressing long-term strategic planning.

Human Resource Development. The technical, information society will mandate new skills for supervisors. The concept of the supervisor as a rational and analytical problem-solver with predominately "organization man" characteristics is changing. Motivational psychologist David McClelland has noted that achievement was the motive of the sixties and power was the motive of the seventies.[63] Daniel Yankelovich indicates the managerial style of the eighties will be built upon values which encompass human relations skills. He indicates there must be a general conviction for a tough-minded as well as a warm-hearted approach.[64]

This new approach to management in the eighties will require social skills in developing people to parallel the skills which are effectively used in controlling them. These new skills include communicating well at all levels of the organization; communicating expectations and standards; being open, honest, and fair with people; developing trust with people regardless of racial, sexual, or cultural factors; confronting problem situations and issues; developing skills

in group and individual effectiveness; being a coach and mentor; and recognizing and molding the skills of others. Educated people do not like to be controlled from the top. Supervisor development, therefore, must focus on processes and skills which articulate organizational and individual issues.

The information society, which has been characterized as interactions between people and ideas and knowledge, will have tremendous implications for the concept of ethos or space, particularly in the workplace. Characteristics of the information society include (1) information ecology - environment, (2) information economy - capitalism, (3) information technology - tools/services, (4) information sociology - culture, (5) information politics - power/issues, (6) information conferencing - discovering, and (7) information resources - data.[65] The "Forward" in Telecommunications for Local Government indicated clearly the intrusion of telecommunications technology. It states:

> The telecommunications technology of the "Information Age" is rapidly overtaking local government. Cable communications, enhanced and interactive services, new telephone systems -- all pose questions that demand knowledge and action on the parts of local decision makers and citizens.[66]

Although the quote is directed at local government, it is indicative of the need to analyze carefully the implementation of technology into society and to intrepret the impact on human resource development.

Human resource development in the information age will become increasingly more complex. Anthony Carnevale indicates "human resource factors account for 80% of the productivity growth of the U.S. since 1929. With the rapid infusion of new technology and changes in world economy, job skill life is getting shorter and shorter, thus creating greater and greater needs for job skill retraining."[67] In Human Capital: A High Yield Corporate Investment, he states:

> Since 1946, we have been forced persistently to reshape our economic and social structures in order to bear, feed, clothe, educate, employ, and house the 76 million members of the American baby boom. As a result, while we have learned to value people for their purchasing power, we have not seen them as critical resources for production.[68]

Amitai Etzioni, author of An Immodest Agenda, indicates that the introduction of high technology may well increase the mismatch between available job skills and available job openings.[69]

Earlier in this document it was indicated that the industrial revolution yielded a work culture that defined and controlled the interaction between workers and the workplace. Toffler suggests that the division of labor, hierarchial structure, and metallic character of the factory were incorporated into other major institutions of society. As the industrial society wave continues to recede and the technical society wave rolls in, it is essential that institutions plan strategically for that transition. Alan Weiss traces three work culture relationships through the industrial wave and a fourth one paving the way for the technical society. The first three relationships he labeled (1) work as the objective, (2) synthesis of work and personal objectives, and (3) work as subordinate to personal objectives.[70] The fourth work culture, synthesis anew, is based on (1) change in the nature of producing work, (2) change in the nature of work, and (3) change in the nature of the work place. Weiss indicated HRD professionals will have to devise a new kit bag of education and training tools that focus on the learner. They include:

1. A demand for self-reinforced learning, available 24 hours a day.
2. The need for development that is interrupted without critical deterioration of the experience.
3. A focus on learning processes, rather than job content (i.e., the process of time management, decision making, delegation, negotiation, etc.).
4. A de-emphasis on leadership as we now know it, and new "remote leadership" skills needed.

5. A fundamental change in motivational needs and factors.
6. Totally new ways to provide feedback and rewards during learning.
7. Tremendously increased need for interactive systems.
8. More frequent and much more accurate course and program validation will be possible.

Models of Strategic Planning. In 1967, the Institute of Life Insurance conducted a Future Outlook Study to assess significant social and political trends because it seemed clear that reactive styles of organizational management were not appropriate in times of rapid change. One result of the Future Outlook Study was a call for an ongoing mechanism to be established by which the business could keep abreast of emerging ideas and social changes that might affect its operating environment. In 1970, an early-warning system called the Trend Analysis Program (TAP) was designed and put into place. TAP continues to operate as a program of the American Council of Life Insurance Association.[71]

The Center for Futures Research of the University of Southern California is participating in a Twenty Year Forecast of The Future of Innovation in America. The Twenty Year Forecast Project, a continuing series of studies that began in 1974, is designed to provide insight into the long term social, economic, and business consequences of change. The Center describes processes which shape alternative futures as follows:

FIGURE 6 PROCESSES WHICH SHAPE ALTERNATIVE FUTURES

Possible Future Changes	Evolving State of Affairs
* technological developments	* economic trends
* resource discoveries	* demographic trends
* natural disasters	* behavioral relationships
* change in weather patterns	* political relationships
* political upheavals	* operating strategy

Socially Controllable Changes

* political intervention
* societal priorities
* economic rules
* resource allocations
* strategic changes

Because of anticipation of unprecedented change in societal trends and values, the Resource Center for Planned Change of the American Association of State Colleges and Universities developed A Futures Creating Paradigm as a way of planning futures and bringing planning assumptions into focus.[72] The project uses a cross-influence matrix of 12 societal trends and 12 values to determine goals in 10 areas. The 12 societal trends are population, government, global affairs, environment, energy, economy, science and technology, human settlements, work life style, women and participation. The 12 societal values are change, freedom, equality, leisure, foresight, pluralism, localism, responsibility, knowledge, quality, goals, and interdependence. The 10 goals are finance, students, research and development, public service, facilities, faculty, curricula, administration, resources, and athletics. Van Ausdale[73] and Warmbroad and Persanich[74] use several of these variables in documents that are useful to institutions that are developing planning processes which track numerous changes. Appalachian State University used the model in pursuing reaffirmation of accreditation from the Southern Association of Colleges and Schools.[75]

Since 1967 overall medical costs have more than tripled and hospital rates have more than quintupled.[76] Because of such increases, the federal government enacted the National Health Planning and Resources Development Act of 1974 (P.L. 93-641 and P.L. 96-79) which established approximately 200 Health Systems Agencies (HSAs) across this nation. Although some of this system was dismantled, the HSA systematically collected and analyzed great quantities of health status and health care systems trend information in order to develop strategic direction. These data are of great value to the health care delivery system and the health education system.

On November 13, 1981, the American Society for Training and Development launched a method (1) to monitor governmental, organizational, societal, and economic trends and (2) to interpret such trends on the field of human resource development. The long-range goal of this project is to be able to develop an ongoing needs-identification in order for ASTD to be proactive in the field of HRD.

Community/State-Centered Planning

Municipal Planning. During the late 1960s and the 1970s a number of municipalities participated in a process to establish and implement communal or statewide goals. In an article in the March-April 1971 issue of City, Routh indicated that some 100 cities and three state governments had launched such an effort.[77] The first and largest of the major goals programs was that of Dallas, underway for nearly six years by 1971. This effort yielded a set of goals in areas of citizen involvement, continuing education, cultural activities, design of the city, economy, elementary and secondary education, energy, environment, government, health, higher education, housing, human service, public safety, quality of the citizenry, recreation and leisure time, and transportation. That process continues today. A 1978 gift from the Dallas Foundation to Goals for Dallas supported the publication Achieving the Goals for Dallas, 1978-1983.[78] The Honorable William P. Clements, Jr., has recently released the Texas 2000 Commission Report and Recommendations.[79]

This type of strategic municipal, regional, and state planning is in the early stages of development and will undoubtedly continue in the 1980s. Municipalities interested in undertaking such a process can obtain a Community Planning Assistance Kit from the Council of Educational Facility Planners[80] and assistance from the International City Management Association including its book The Essential Community: Local Government in the Year 2000.[81]

Two other projects worth noting focus on leadership development. The American Association of Community and Junior Colleges currently is in the second year of a three year grant from the W. W. Kellogg Foundation to establish a series of seminars and workshops in two-year colleges to assist citizen boards of community organizations. Numerous municipalities have launched community leadership programs, some with assistance from a book by the National

Association of Community Leadership Organizations entitled How To Develop A Community Leadership Program (1982).

Economic Development. Numerous municipalities are conducting projects to train the unemployed.[82] Laudable and necessary as they are, they represented a tertiary rehabilitation model as opposed to a primary or secondary prevention model. The intervention strategy is the result of a crisis as opposed to a process designed to diagnose a potential problem and prevent the development of the malady. Nor are they a secondary prevention model, that of identification of an illness at an early stage in order to prevent its complication. The intervention occurs only after the crises struck the final blow even though early warning signals may have been transmitted over the past several years.

Foreign competition, technological advances, changes in productivity, high costs, plant obsolescence, and infrastructure deterioration are causing major dislocations in our economy. The story of America's deteriorating infrastructure is all too familiar by now. There were 17,044 business failures in 1981, a 45% increase from the 11,742 in 1980. There were 11,950 business failures in the first six months of 1982. The economic and social consequences of plant closings are documented in the literature.[83]

Helping entrepreneurs and business and industry is essential for economic revitalization. Research indicates that 80% of the new jobs are created by establishments no more than four years of age and with 20 or fewer employees.[84] Research by Cooper and Dunkelberg indicates that most entrepreneurs started their companies when they were 25 to 40; many are highly educated with 36% having 16 or more years of schooling; and about 50% had entrepreneural parents.[85] In addition, research by Cooper indicates that the most important dimensions leading to new product success are (1) product uniqueness and superiority,

(2) market knowledge and marketing proficiency, and (3) technical and production synergy and proficiency.[86]

Economic development appears to be linked to several fundamental concepts. A state or region can either attract, retain, or expand business, the latter including the entrepreneur breaking away from an existing business to start a new one. A recent report by the Joint Economic Committee of the Congress of the United States indicated that skilled workforce, taxes, and academic institutions of a region were the most important attractions to high technology companies.[87] The importance of skilled labor in the location decision indicates that state development strategies should take a proactive stance relative to human resource development. The importance of academic institutions mandates an emphasis on excellence and quality, particularly in the sciences and engineering. Other factors that were listed as important were favorable business climate, regulatory practices and procedures, the cost of living (including housing), the availability and cost of land for expansion, a good people-oriented transportation and good schools. Factors that are not important include water supply, waste treatment facilities, cultural amenities (exclusive of recreational opportunities), energy and climate.

Infrastructure requirements will vary by type of business or industry and its stage in the developmental or evolutionary process. Proactive strategic planning for economic development or revitalization would require that a region (1) audit or inventory available infrastructure requirements including human resources, (2) assess infrastructure and resource requirements of industries in a region and (3) continue to develop the infrastructure requirements necessary for the corporations to prosper. In the case of attracting new businesses, the region would have to assess the infrastructure requirements necessary to be competitive in the site selection process.

It should come as no surprise that a number of proposals have been developed which call for education to be a partner in the economic renewal of states and the nation. The U.S. Chamber of Commerce has had a long interest in education. That interest in education has resulted in the report entitled American Education: An Economic Issue[88] In an economy dominated by agriculture or by machine production it is much easier to neglect literacy and not have too great an economic impact. A technical society that makes its living predominantly by sharing information through complex electronic data processing and communications equipment must make intellectual capital formation one of its highest priorities. These shifts have produced a number of proposals such as California's "Investment in People" program; the Ohio Board of Regents' proposal to establish the Ohio Business, Education, and Government Alliance; Connecticut's projects in computer literacy and identifying and analyzing employer needs; Pennsylvania's "Ben Franklin Partnership" project for advanced technologies; the HRD Program sponsored by the North Carolina Department of Community Colleges; the Massachusetts Small Business Advancement and Identification Programs; the Employee Development and Training Program sponsored by the United Auto Workers, Ford Motor Company and several community colleges with the EDTP National Center located on the campus of Henry Ford Community College in Michigan.

Summary and Conclusion

The maturation of society to a technological one necessitates the development of broad-based strategic institutional and system-wide planning processes based on data derived from an assessment of an organization's external environment and an audit of its internal environment. The unprecedented infusion of science and technology holds the potential for the evolution of a humanistic, holistic, person-centered society.

The evolution of the technetronic society can develop in a systematic way if this nation can manage the issue of intellectual capital formation. The emphasis of education and training as a capital investment is not a new one. Adam Smith, in 1776, said:

> The acquisition of such talents, by the maintenance of the acquirer during his education, study, or apprenticeship, always costs a real expense, which is a capital fixed and realized, as it were, in his person. Those talents as they make a part of his fortune, so do they likewise of that of the society to which he belongs.[90]

Robert Haavind, editor of High Technology stated the challenge as follows: "An unprecedented battle is being waged among industrial nations for world supremacy in technology."[91] The authors of Global Stakes: The Future of High Technology in America call for a modern "Morrill Act" to generate $1 billion in federal, state, and private support for high technology education.[92] Testimony by the American Association of Community and Junior Colleges before the House Subcommittee on Elementary, Secondary, and Vocational Education elaborated on the point: "The future of our nation depends on how fully we utilize our resources. As our economy becomes more dependent on high technology and the delivery of sophisticated services, the need for better development of our human resources is a necessity."[93]

Strategic planning and management is one means for managing the issue of intellectual capital formation in our society's evolution toward a humanistic, holistic, person-centered society that is the beneficiary of science and technology. We have the tools. Do we have the spirit and are we willing to commit the resources to dedicate our institutions as instruments to develop that type of society? As one futurist stated: "A future that isn't forecast is like an accident waiting to happen."[94]

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