

Essay

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THE FUTURE AND BEYOND

By Jacque Fresco

BEYOND UTOPIA

With the advent of future developments in science and technology, we will assign more and more decision making to machines. At present this is evident in military systems in which electronic sensors maintain the ideal flight characteristics in advanced aircraft. The capacities of computers today exceed five hundred trillion bits of information per second. The complexity of today's civilization is far too complex for human systems to manage without the assistance of electronic computers. Computers of today are relatively primitive compared to those that will evolve in the future. Eventually the management of social systems will call for require electronic sensors interconnected with all phases of the social sequences thus eliminating the need for politics.

Today modern industrial plants have built in automatic inventory systems, which order materials such as bearings and other mechanical replacements well in advance.

We believe it is now possible to achieve a society where people would be able to live longer, healthier, and more meaningful productive lives. In such a society, the measure of success would be based upon the fulfillment of one's individual pursuits rather than the acquisition of wealth, property, and power. Although many of the concepts presented here may appear as unattainable goals, all of the ideas are based upon known scientific principles. It is not my purpose to write an article that would be acceptable to people this is not the concern of science.

The social direction being proposed here has no parallel in history with any other previous political ideology or economic strategy. Establishing the parameters of this new civilization will require transcending many of the traditions, values, and methods of the past. The future will evolve its own new paradigms, appropriate to each successive phase of human and technological development.

Throughout the history of civilization few national leaders or politicians have ever proposed a comprehensive plan to improve the lives of all people under their

jurisdiction. Although such individuals as Plato, Edward Bellamy, H.G. Wells, Karl Marx, and Howard Scott all made some attempts to present a new civilization, the established social order considered them impractical dreamers with Utopian designs that ran contrary to the innate elements of human nature. Arrayed against these social pioneers was a formidable status quo composed of vested interests that were comfortable with the way things were, and a populace at large that, out of years of indoctrination and conditioning, wanted no radical changes. These were the millions of unappointed guardians of the status quo. The outlook and philosophy of the leaders were consistent with their positions of differential advantage.

In 1898, Edward Bellamy wrote the book *Looking Backward*. He conceived of an ideal egalitarian social system with many advanced ideas for its time. This bestseller generated a great deal of interest, and many people inquired as to how this type of cooperative Utopian society could be brought about. But Bellamy replied that he was just a writer and did not know how to create such a society.

The proposals he presented, and those of Plato's *Republic*, the writings of Karl Marx, H. G. Wells in his book *The Shape of Things to Come*, and many others all represent attempts to find workable solutions to the many problems that earlier civilizations were unable to resolve. There is little doubt that at the time of Bellamy's books the social conditions were abominable, which made the Utopian ideal extremely appealing. What appears to be lacking in most of these concepts, however, has been an overall plan and the necessary methods for a transitional system to enable the idea to become a reality. Most of the early visions of a better world did not allow for changes in either technology or human values, tending to arrest innovative efforts. Additionally, all have lacked a comprehensive set of blueprints, models, and a methodology for implementation. Finally, they lacked competent individuals to bring about such a transition.

The answers do not lie in debate or philosophical discussion of values, but rather in methodology. Thus what is needed is an operational definition of a better world, which is as follows: To constantly maximize existing and future technologies with the sole purpose of enhancing all human life and protecting the environment.

Today we have developed the necessary technology to surpass the fondest hopes and dreams of any social innovators of the past. The fact that previous attempts at social change have failed is no justification for us to stop trying. The real danger lies in complacency. The only limitations to the future of humankind are those that we impose upon ourselves. It is now possible to relieve humanity of many of its unresolved problems through the humane application of technology.

Many years ago an attempt was made in the U. S. to understand a social and economic system different from our own. A film called "The March of Time" had

this to say about Soviet Communism: "We believe that the American free-enterprise system will function better than the collective system. However, we wish you the best of luck on your new and unusual social experiment." The failure of communism to provide for human needs and to enrich the lives of its citizens is not unlike our own failures. Both failure and success are inherent in the on-going experiment that is social evolution. In all established social systems it is necessary to devise different approaches to improve the workings of the system.

Science is replete with examples of experiments that have failed, as well as those that have been successful. In the development of the airplane, for example, there were thousands of failures before the first workable model was produced. In the field of medicine, Dr. Erlich attempted over 600 different approaches to controlling syphilis before one was finally proven successful. All of the technology we use today, such as computers, cellular phones, the Internet, aircraft, and automobiles, are in a constant state of improvement and modification. Yet our social system and values remain largely static. An inscription on one of our government buildings reads as follows: "Where there is no vision, the people perish." Attaining visions requires change. The major reason for resisting change is that it tends to threaten the established interests. Actually, the fear of social change is somewhat unfounded when we consider that the entire history of civilization has been, in a sense, an experiment. Even the American free-enterprise system, during its earliest stages, faced a multitude of problems much more severe than they are today. These included long work hours, exploitation of child labor, inadequate ventilation in industrial plants, lack of rights for women and minorities, hazardous conditions in mines, and racial prejudice. Despite its many problems, it was the greatest social experiment in history in terms of diversity of lifestyles and individual freedoms, innovations in architecture and technology, and overall progress in general. It is imperative that we continue the process of social experimentation in order to transcend our present limitations and enhance the lives of everyone.

The future does not depend on our present-day beliefs or social customs, but will continue to evolve a set of values unique to its own time. There are no "Utopias." The very notion of "Utopia" is static. However, the survival of any social system ultimately depends upon its ability to allow for appropriate change to improve society as a whole. The paths that we choose will ultimately determine whether or not there is intelligent life on earth.

NEW FRONTIERS OF SOCIAL CHANGE

It has often been observed that common crises create common bonds. While people seek advantage during the times of prosperity, shared suffering tends to draw people closer together. We have seen this behavior repeated time and time again throughout the centuries, during times of flood, famine, fire, or other natural disasters. Once the threat is resolved, however, scarcity patterns once again begin to steer people back to their behaviors of seeking individual advantage. Sensationalist motion pictures such as Independence Day depict a world united for the purpose of repelling an invasion by a hostile alien culture. Indeed, it seems that the only force that would mobilize the world in a unified direction would be one that poses a common threat, such as a colossal meteor hurling towards the earth, or some other major catastrophic event. If such an event were to occur, all border disputes would become irrelevant in the face of impending disaster. While many would call upon divine intervention for salvation, all nations would surely combine their efforts and call upon science and technology to deal with this common threat. Bankers, lawyers, businessmen, and politicians would all be bypassed. Every resource would be harnessed and mobilized, without any concern for monetary cost or profit. Under this kind of threatening condition, most people realize where the key to their survival lies. For example, during the Second World War, it was the collective mobilization of both human and material resources that led to a successful resolution for the U.S. and its allies.

As the amount of scientific information grows, nations and people are coming to realize that even in today's divided world there are, in fact, many common threats that transcend national boundaries. These include overpopulation, energy shortages, pollution, water shortages, economic catastrophe, the spread of uncontrollable disease and so forth. However, faced even with threats of this magnitude, which are common to all nations, the direction of human action will not be altered so long as powerful nations are able to maintain control of the limited resources available.

Although many people, publications, and multi-media presentations portray various aspects of the future and paint spectacular pictures of the developments to come in such areas as transportation, housing, and medicine, they ignore the fact that in a monetary-based economy the full benefits of these developments continue to be available to a relative few. What is not touched upon is how these new technologies of the future can be used to organize societies and economies efficiently and equitably, without the necessity of uniformity, so that everyone would benefit from them. The few think tanks devoted to brainstorming newer approaches to bring social organization up to speed with today's technological capabilities do not deal with social change as a global systems plan.

Neither are there any overall social plans in government or industry to totally eliminate the negative effects of the displacement of people by machines, nor does there seem to be any genuine concern to do so. Many people believe that

in the event of any social breakdown the government will bring about the necessary changes for their survival. This is highly improbable. In the event of such a breakdown the existing government would most likely declare a state of emergency in an attempt to prevent total chaos. It would then institute measures that may address immediate problems, at the same time attempting to preserve existing institutions and power structures, even though these may be a chief contributing factor to the problems.

Many people throughout history have taken politicians to task for actions that have not been entirely in society's best interest. The reasons for this become clearer when one realizes that even in modern democracies, these leaders do not benefit the lives of the average person. Rather, they maintain the preferential positions of much of the established order. There are growing indications of awareness on the part of people in many areas of the world that events have gone beyond the control of their political leaders. Everywhere we see political figures and parties come and go, political strategies adopted and discarded for their inability to satisfy the demands of one faction or another.

The reason that we do not suggest writing your congressman, or any number of governmental agencies, is that they lack the necessary knowledge to deal with our problems. Their focus is to preserve existing systems, not to change them. It appears that there are few within present-day societies who want to phase themselves out. In modern industrial societies the cause of inaction lies within the cumbersome political process itself, an anachronism in an era when most decisions can be made on any important issue in a split second by the objective entry of relevant data into computers.

The prime conditions that would really effect social change will come about when conditions have deteriorated to such an extent that governments, politicians, and social institutions no longer have the support and confidence of the people. What once worked is acknowledged to be no longer relevant. If the public were better informed, only then would it be possible to introduce a new and improved social arrangement.

Unfortunately, today the majority of people respond to simplistic answers, which tend to repeat the cycle of events. When faced with intolerable social conditions, many of the older patterns will emerge again as people attempt to find someone or something to blame for the conditions, e.g. minorities, immigrants, negligence in adhering to religious principles or family values, and the influences of some inexplicable supernatural forces.

True social change is not brought about by men and women of reason and good will on a personal level. The notion that one can sit and talk to individuals and alter their values is highly improbable. If the person one is talking to does not have the fundamental knowledge of the operation of scientific principles and the

processes of natural laws, it is difficult for them to understand how the pieces fit together on a holistic level.

The solutions to our problems will not come about through the application of reason or logic. Unfortunately, at present we do not live in a reasonable or logical world. There appears to be no historical record of any established society's leader who deliberately and comprehensively redesigned a culture to fit the changing times. While there is no question that political leaders, to a limited extent, modify some modes of behavior, the real factors responsible for social change are brought about by bio-social pressures, which are inherent in all social systems. Change is brought about by natural or economic occurrences that adversely affect the immediate circumstances of large numbers of people.

Some bio-social pressures responsible for social change are limited resources, war, overpopulation, epidemics, natural disasters, economic recession, downsizing on a mass scale, technological displacement of people by machines, and the failure of elected officials to overcome such problems. The introduction of the medium of money to the exchange process brought about a significant change in society, as did the introduction of mechanized agriculture and the Industrial Revolution.

Unfortunately, the world's outmoded social, political, and international order is no longer appropriate to these times. These obsolete social institutions are unable to grasp the significance of innovative technology to achieve the greatest good for all people, and to overcome the inequities forced upon so many. Competition and scarcity have caused an atmosphere of jealousy and mistrust to develop between individuals and nations. The concepts of proprietary rights, intellectual property, copyrights, and patents manifested in corporate entities and in the sovereignty of nations, preclude the free exchange of information that is necessary to meet global challenges. The European Union represents an attempt to bridge the present with the future, but it falls far short in that it relies on the crutch of the monetary system.

We cannot regress to traditional values, which no longer apply. Any attempt to retreat to the methods of the past would condemn untold millions to a life of needless misery, toil, and suffering.

However, it is not enough to point out the limiting factors that may threaten the survivability of all nations. The challenge that all cultures will encounter in this technological age - some more than others - is that of providing a smoother transition, which would introduce a more appropriate way of thinking about ourselves, the environment and the management of human affairs.

The ultimate survival of the human species depends upon planning on a global scale and to cooperatively seek out new alternatives with a relative orientation for

improved social arrangements. If humankind is to achieve mutual prosperity, universal access to resources is essential.

Along with the introduction of new paradigms towards human and environmental concern, there must be a methodology for making this a reality. If these ends are to be achieved, the monetary system must eventually be surpassed by a world resource-based economy. In order to effectively and economically utilize resources, the necessary cybernated and computerized technology could eventually be applied to ensure a higher standard of living for everyone. With the intelligent and humane application of science and technology, the nations of the world could guide and shape the future for the preservation of the environment and humankind.

What is needed to attain a global society is a practical and internationally acceptable comprehensive blueprint. Also needed is an international planning council capable of translating the blueprint and the advantages that would be gained through world unification. This proposal could be presented in the vernacular, in a way that non-technical people can easily understand.

In actuality, no one should make decisions as to how this blueprint will be designed. It must be based on the carrying capacity of our planet, its resources, human needs and the like. In order to sustain our civilization we must coordinate advanced technology and available resources in a total, humane, global systems approach.

There is no doubt that many of the professions that are familiar to us today will eventually be phased out. With the rate of change now taking place, a vast array of obsolete occupations will disappear more rapidly and more extensively than at any other time in history. In a society that applies a systems approach, these professions will be replaced by interdisciplinary teams – the systems analysts, computer programmers, operation researchers, and those who link the world together in vast communications networks that are assisted by high-speed digital computers. They will eventually lead us to large-scale computer-based methods of social operation. Social operations are far too complex today for any elected politicians to handle.

It appears that most politicians do not give serious attention to this and other problems. Only in times of war or national emergencies do we call upon and assemble interdisciplinary teams to help find workable solutions to varying social problems. If we apply the same efforts of scientific mobilization as we do during a war, large-scale beneficial effects can be achieved in a relatively short time. This could readily be accomplished by utilizing many of our universities, training facilities, and staff to best determine possible alternative methods to solving these problems. This could eventually help us to define the possible transitional parameters for the future of a sustainable global civilization.

The process of social change must allow for changing conditions that would continuously update the design parameters and allow for the infusion of new technologies into emerging cultures. Design teams utilizing socially integrated computers could automatically be informed of new developments. As this process is continuously updated, it would generate a more appropriate code of conduct. By appropriate conduct we mean the necessary procedures to accomplish a given task.

All the limitations imposed upon us by our present-day monetary system could be surpassed by adopting a global consensus for a worldwide resource-based economy, in which all the planetary resources are viewed and treated as the common heritage of all the earth's inhabitants. In this manner, the earth and our technological procedures could provide us with a limitless supply of material goods and services without the creation of debt or taxation whatsoever.

THE OBSOLETE MONETARY SYSTEM

Although skillful advertisers lead us to believe otherwise, in today's monetary-based economies, whenever new technology is introduced, the human consequences are of little concern to those introducing the technology - except, of course, as customers. In a monetary-based system, the major concerns of industry are profit, maintaining a competitive edge, and watching the bottom line, rather than the wellbeing of humanity. The social problems that arise from mass unemployment of people, who are rendered obsolete by the infusion of automation, are considered irrelevant, if they are considered at all. Any need that may be met is secondary to acquiring a profit for the business. If the profit is insufficient, the service will be withdrawn. What industry seeks to do is improve the competitive edge to increase the profit margin for their shareholders. It does not serve the interest of a monetary based society to engage in the production of goods and services to enhance the lives of people as a goal. With rising public concern regarding the greenhouse effect, acid rain, polluted air and water, etc. some companies are also beginning to realize that for sustained market presence it is in their best interest to heed social and environmental concerns. While such trends are commendable, they are insufficient as a method of solving the overall problems of waste, environmental degradation and unnecessary human suffering.

The monetary system has been a useful, but interim tool, it came into being as a means of placing a value on scarce objects and labor. The monetary system of course replaced the barter system, which involved direct trading of objects and labor. However, just as there was no universal-bartering standard in the past, there is no global monetary system today. Individuals and groups, now as in the past, however, still need to exchange objects and labor for today's goods and services. The unequal distribution of skills, resources and materials throughout the world necessitates global trade.

Until the last few decades, the monetary system functioned to a degree. The global population of three billion was not over consuming world resources and energy, global warming was not evident, and air and water pollution were only recognized by a relative few. The start of the 21st century however finds global population at an exponentially rising six billion, with resources and energy supplies dwindling, global warming a reality, and pollution evident worldwide. Planet earth is in crises and the majority of world population cannot meet their basic needs because people do not have the means to purchase increasingly expensive resources. Money is now the determinant of people's standard of living rather than the availability of resources.

In a monetary system purchasing power is not related to our capacity to produce goods and services. For example, in a recession there are CD's in store windows and automobiles in car lots, but many people do not have the purchasing power

to buy them. The earth is still the same place; it is just the rules of the game that are obsolete and create strife, deprivation, and unnecessary human suffering.

In today's culture of profit, we do not produce goods based on human need. We do not build houses based on population needs. We do not grow food to feed people. Industry's major motivation is profit.

The monetary system is now an impediment to survival rather than a means of facilitating individual existence and growth. This imaginary tool has outlived its usefulness. The limitations on earth's population now caused by the monetary construct can be phased out. It is not money that people need but the access to goods and services. Since humanity requires resources to exist, the replacement system should provide those resources directly to people without the impediment of financial and political interest for their private gain at the expense of the lives and livelihood of the populous. The replacement system is therefore logically a resource-based economy. This global resource based economy would be gradually phased in while the monetary system is phased out.

All of the world's economic systems - socialism, communism, fascism, and even the vaunted free enterprise capitalist system - perpetuate social stratification, elitism, nationalism and racism, primarily based on economic disparity. As long as a social system uses money or barter, people and nations will seek to maintain positions of differential advantage. If they cannot do so by means of commerce they will resort to military intervention.

War represents the supreme failure of nations to resolve their differences. From a strictly pragmatic standpoint it is the most inefficient waste of lives and resources ever conceived by any creature on the planet. This crude and violent way of attempting to resolve international differences has taken on even more ominous overtones with the advent of elaborate computerized thermonuclear delivery systems, deadly diseases and gases, and the threat of sabotage of a nation's computer networks. Despite the desire of nations to achieve peace, they usually lack the knowledge of how to arrive at peaceful solutions.

War is not the only form of violence in the developed and underdeveloped countries that is superimposed upon the populace by inadequate social arrangements. There is also hunger, poverty, and scarcity. As long as there is the use of money, the creation of debt, and economic insecurity these conditions will perpetuate crime, lawlessness, and resentment. Paper proclamations and treaties do not alter conditions of scarcity and insecurity. And nationalism only tends to help propagate the separation of nations and the world's people.

Even the signing of a peace treaty cannot avoid another war if the underlying causes are not addressed. The unworkable aspects of international law tend to freeze things as they are. All of the nations that have conquered land all over the world by force and violence would still retain their positions of territorial and

resource advantage. Whether we realize it or not, such agreements only serve as temporary suspensions to conflict.

Attempting to find solutions to the monumental problems within our present society will only serve as temporary patchwork, prolonging an obsolete system.

In this world of constant change it is no longer a question of whether we choose to make the necessary changes; it is now mandatory that we take on this challenge and adopt these new requirements or face the inevitable decay of our present social and economic institution.

This is the dilemma we must face head-on, and the solutions we arrive at must fit the circumstances of the "real-world." There appears to be no other way than to update our outlook and create a newer direction by relegating the old values to past civilizations. Unfortunately, this may not be accomplished prior to the point of no return in the global economy.

RESOURCE-BASED ECONOMY

Presented here is a straightforward approach to the redesign of a culture, in which the age-old inadequacies of war, poverty, hunger, debt, and unnecessary human suffering are viewed not only as avoidable, but totally unacceptable. This new social design works towards eliminating the underlying causes that are responsible for many of our problems. But, as stated previously, they cannot be eliminated within the framework of the present monetary and political establishment. Human behavior is subject to the same laws that govern all other physical phenomena. Our customs, behaviors, and values are byproducts of our culture. No one is born with greed, prejudice, bigotry and hatred - they are learned. If the environment is unaltered similar problems will reoccur.

These aspirations cannot be accomplished in a monetary based society of waste and human exploitation. With its planned obsolescence, neglect of the environment, outrageous military expenditures and the outworn methods of attempting to solve problems through the enactment of laws, these methods are bound to fail. Furthermore the belief that advanced technologies would lead to an improvement in the quality of life for most people is not the case in a monetary system. More and more companies are adopting the tremendous benefits of automation, resulting in increased production with fewer employees. Corporations' short-term concern with profit will ultimately result in the demise of the world monetary based economies. If the monetary system continues to operate, we will be faced with the condition of more technological unemployment, today referred to as downsizing. From 1990 to 1995, companies dismissed a staggering 17.1 million employees, many of these due to automation. Automation will continue to replace people well into the foreseeable future, resulting in the lack of purchasing power for these displaced workers. Despite expanding global markets, the human cost in terms of displaced workers and a disenfranchised populous, will inevitably bring about massive and unmanageable social problems.

During the 1930's, at the height of the Great Depression, the Roosevelt administration enacted new social legislation designed to minimize revolutionary tendencies and to address the problems of unemployment. Jobs were provided through the Works Progress Administration, Civilian Conservation Corps, National Recovery Act, transient camps, and Federal Arts projects. Ultimately, however, World War II pulled the U.S. out of that worldwide depression. If we permit current conditions to take their natural course, we will soon be faced with another international recession of potentially greater magnitude. At the time of this depression the US had only 600 first class fighting aircraft at the beginning of World War II, we rapidly increased production to 90,000 planes per year. Did we have enough money to pay for the required implements of war? The answer is no. Neither did we have enough gold. But, we did have more than enough resources. It was the available resources and personnel that enabled the U. S. to

achieve the production and efficiency required to win the war. Unfortunately, such an all-out effort is only considered in times of war or disaster.

We live in a culture that seems to work collectively only in response to a crisis. Only in times of war do we call upon and assemble interdisciplinary teams to meet a threat from human aggression. Only in times of national emergency do we do the same to resolve a natural or man-made threat. Rarely, if ever, do we employ a concerted effort to help find workable solutions to social problems. If we apply the same efforts of scientific mobilization toward social betterment as we do during a war or disaster, large-scale results could be achieved in a relatively short time.

The Earth is still abundant with resources. Today our practice of rationing resources through monetary methods is irrelevant and counter-productive to the well-being of people. Today's society has access to highly advanced technologies and can easily provide more than enough for a very high standard of living for all the earth's people. This is possible through the implementation of a resource-based economy.

Simply stated, a resource-based economy utilizes existing resources rather than money, and provides an equitable method of distribution in the most humane and efficient manner for the entire population. It is a system in which all natural, man-made, machine-made, and synthetic resources would be available without the use of money, credits, barter, or any other form of symbolic exchange. A resource-based economy would utilize existing resources from the land and sea, and the means of production, such as physical equipment and industrial plants, to enhance the lives of the total population. In an economy based on resources rather than money, we could easily produce all of the necessities of life and provide a high standard of living for all.

To further clarify the concept of a resource based economy consider this example: A group of people is stranded on an island with enormous purchasing power including gold, silver and diamonds. All this wealth would be irrelevant to their survival if the island had few resources such as food, clean air, and water. Only when population exceeds the productive capacity of the land do problems such as greed, crime, and violence emerge. On the other hand, if people were stranded on an island that was abundant with natural resources producing more than the necessities for survival, then a monetary system would be irrelevant. It is only when resources are scarce that money can be used to control their distribution. One could not, for example, sell the air we breathe, the sand on the beach, or the salt water in the ocean to someone else on the island who has equal access to all these things. In a resource-based economy all of the world's resources would be held as the common heritage of all of the earth's people, thus eventually outgrowing the need for the artificial boundaries that separate people – this is the unifying imperative.

We must emphasize here that this approach to global governance has nothing whatever in common with the present aims of a corporate elite to form a world government with themselves and large corporations in control, and the vast majority of the world's population subservient to them. Globalization in a resource-based economy empowers each and every person on the planet to be the very best they can be, not to live in abject subjugation to a corporate governing body.

All social systems, regardless of political philosophy, religious beliefs, or social customs, ultimately depend upon natural resources, e.g. clean air and water, arable land, and the necessary technology and personnel to maintain a high standard of living. This can be accomplished through the intelligent and humane application of science and technology. The real wealth of any nation lies in its developed and potential resources and the people who are working toward the elimination of scarcity and the development of a more humane way of life. A resource-based economy would use technology to overcome scarce resources by utilizing renewable sources of energy; computerizing and automating manufacturing, inventory and distribution; designing safe, energy-efficient cities; providing universal health care and relevant education; and most of all, by generating a new incentive system based on human and environmental concern.

Unfortunately, today science and technology have been diverted from these ends for reasons of self-interest and monetary gain through the conscious withdrawal of efficiency, or through planned obsolescence. For example, it is an ironic state of affairs when the U. S. Department of Agriculture, whose function is to conduct research into ways of achieving higher crop yields per acre, pays farmers not to produce at full capacity while many people go hungry. Another example is the choice of some companies to illegally dump solid waste into oceans and rivers to save money, when more ecologically sound disposal methods are available. A third example is the failure of some industries to install electrostatic precipitators in their factories' smokestacks to prevent particulate matter from being released into the atmosphere, even though the technology has been available for over 75 years. The monetary system does not always apply known methods that would best serve people and the environment.

In a resource-based economy, the human aspect would be of prime concern, and technology would be subordinate to this. This would result in a considerable increase in leisure time. In an economy in which production is accomplished primarily by machines, and products and services are available to all, the concepts of "work" and "earning a living" would become irrelevant. But if the human consequences of automation are unresolved, as they are today, then it renders all the advances of science and technology of much less significance.

The utilization of today's high speed and large capacity computer systems, otherwise known as the "Information Superhighway" or Internet, could assist us in defining the variables and parameters required for the operation of a resource-

based economy that conforms to environmental needs. Over-exploitation of resources would be unnecessary and surpassed.

Many people believe that there is too much technology in the world today, and that technology is the major cause of our environmental pollution. This is not the case. Rather, it is the abuse and misuse of technology that should be our major concern. In very simple terms, a hammer can be used to construct a building, or to kill another person. It is not the hammer that is the issue, but how it is used.

Cybernation, or the application of computers and automation to the social system, could be regarded as an emancipation proclamation for humankind if used humanely and intelligently. Its thorough application could eventually enable people to have the highest conceivable standard of living with practically no labor. It could free people for the first time in human history from a highly structured and outwardly imposed routine of repetitive and mundane activity. It could enable one to return to the Greek concept of leisure, where slaves did most of the work and men had time to cultivate their minds. The essential difference is that in the future, each of us will command more than a million slaves - but they will be mechanical and electrical slaves, not fellow human beings. This will end forever the degrading exploitation of any human being by another so that he or she lives an abundant, productive, and less stressful life. Perhaps the greatest aid in enhancing the survival of the human race is the introduction of cybernation, the electronic computer, and artificial intelligence, which may very well save the human race from its own inadequacies.

A resource-based economy calls for the redesign of our cities, transportation systems, and industrial plants so that they are energy efficient, clean, and conveniently provide the needs of all people both materially and spiritually. These new cybernated cities would have their electrical sensors' autonomic nervous system extended into all areas of the social complex. Their function would be to coordinate a balance between production and distribution and to operate a balance-load economy. Decisions would be arrived at on the basis of feedback from the environment. Despite today's mania for national security, and subsequent intrusions into everyone's personal affairs, in a world-wide resource-based economy where no one need take from another, it will be considered socially offensive and counterproductive for machines to monitor the activities of individuals. In fact, such intrusion would serve no useful purpose.

To further understand the operation of cybernation in the city system, for example, in the agricultural belt the electronic probes imbedded in the soil would automatically keep a constant inventory of the water table, soil conditions, nutrients, etc. and act appropriately without the need for human intervention. This method of industrial electronic feedback could be applied to the entire management of a global economy.

All raw materials used to manufacture products can be transported directly to the manufacturing facilities by automated transportation "sequences" such as ships, monorails, trains, pipelines, and pneumatic tubes, and the like. All transportation systems are fully utilized in both directions. There would be no empty trucks, trains, or transport units on return trips. There would be no freight trains stored in yards, awaiting a business cycle for their use. An automated inventory system would be connected to both the distribution centers and the manufacturing facilities, thus coordinating production to meet demand and providing a constant evaluation of preferences and consumption statistics. In this way a balanced-load economy can be assured and shortages, over-runs, and waste could be eliminated.

The method for the distribution of goods and services in a resource-based economy without the use of money or tokens could be accomplished through the establishment of distribution centers. These distribution centers would be similar to a public library or an exposition, where the advantages of new products can be explained and demonstrated. For example, if one were to visit Yellowstone National Park, one could check out a still or video camera on-site, use the camera, and if they do not want to keep it, return it to another readily accessible distribution center or drop-off point, thus eliminating the individual's need to store and maintain the equipment.

In addition to computerized centers, which would be located throughout the various communities, there would be 3-D, flat-screen televised imaging capabilities right in the convenience of one's own home. If an item is desired, an order would be placed, and the item could be automatically delivered directly to a person's place of residence.

With the infusion of a resource-based, world economy and an all-out effort to develop new, clean, renewable sources of energy, (such as geothermal, controlled fusion, solar heat concentrators, photovoltaics, wind, wave, tidal power, and fuel from the oceans), we will eventually be able to have energy in unlimited quantity that could serve civilization for thousands of years.

To better understand the meaning of a resource-based economy consider this: If all the money in the world were to suddenly disappear, as long as topsoil, factories, and other resources were left intact, we could build anything we chose to build and fulfill any human need. It is not money that people need, but rather it is freedom of access to most of their necessities without ever having to appeal to a government bureaucracy or any other agency. In a resource-based economy money would become irrelevant. All that would be required are the resources, manufacturing, and distribution of the products.

Take the automobile. In order to service conventional automobiles today we have to remove a great deal of hardware before we can get to the engine. Why are they made so complicated? This reason is simply because ease of repair is not

the concern of the manufacturers. They do not have to pay to service the car. If they did, I can assure you, they would design automobiles that consist of modular components that could be easily disengaged, thus facilitating easier access to the engine. Such construction would be typical in a resource-based economy. Many of the components in the automobile would be easily detachable to save time and energy in the rare case of repair, because no one would profit by servicing automobiles or any other products. Consequentially all products would be of the highest quality, and they would be simplified for convenience of service. Automotive transport units engineered in this way can easily be designed to be service-free for many years. All the components within the car could be easily replaced when needed with improved technologies. Eventually, with the development of magnetically suspended bearings, lubrication and wear would be relegated to the past. Proximity sensors in the vehicles would prevent collisions, further reducing servicing and repair requirements.

This same process would be carried out for all other products. All industrial devices would be designed for recycling. However, the life span of products would be significantly increased through intelligent and efficient design, thereby reducing waste. There would be no "planned obsolescence," where products are deliberately designed to wear out or break down. In a resource-based economy technology intelligently and efficiently applied will conserve energy, reduce waste, and provide more leisure time. During the transition, the workweek could be staggered thus eliminating traffic jams or crowding in all areas of human activity, including beaches and recreation areas.

Most packaging systems would be standardized, requiring less storage space and facilitating easy handling. To eliminate waste such as newsprint, books, and other publications, these could be replaced, for example, by an electronic process in which a light-sensitive film is placed over a monitor or TV, producing a temporary printout. This material would be capable of storing the information until it is deleted. This would conserve our forests and millions of pounds of paper, which is a major part of the recycling process. Eventually, most paperwork would no longer be required, i.e. advertising, money, mail, newspaper, phonebook.

As we outgrow the need for professions that are based on the monetary system, such as lawyers, accountants, bankers, insurance companies, advertising, sales personnel, and stockbrokers, a considerable amount of waste and non productive personnel could be eliminated. Enormous amounts of time and energy would also be saved by eliminating the duplication of competing products. Instead of having hundreds of different manufacturing plants and all the paperwork and personnel that are required to turn out similar products, only very few of the highest quality would be needed to serve the entire population. In a resource-base economy planned obsolescence would not exist.

MOTIVATION, INCENTIVE & CREATIVITY

It is claimed that the so-called free-enterprise system creates incentive. This may be true, but it also perpetuates greed, embezzlement, corruption, crime, stress, economic hardship, and insecurity. In addition, the argument that the monetary system and competition generate incentive does not always hold true. Most of our major developments in science and technology have been the result of the efforts of very few individuals working independently and often against great opposition. Such contributors as Goddard, Galileo, Darwin, Tesla, Edison, and Einstein were individuals who were genuinely concerned with solving problems and improving processes rather than with mere financial gain. Actually, very often there is much mistrust in those whose incentive is entirely motivated by monetary gain, this can be said for lawyers, businessmen, salesman and those in just about any field.

Some may question that if the basic necessities are accessible to all people, what will motivate them? This is tantamount to saying that children reared in affluent environments, in which their parents provide all the necessary food, clothing, shelter, nutrition, and extensive education, will demonstrate a lack of incentive or initiative. There is no evidence to support this fallacious assumption. There is overwhelming evidence to support the facts that malnutrition, lack of employment, low wages, poor health, lack of direction, lack of education, homelessness, little or no reinforcement for one's efforts, poor role models, poverty, and a bleak prospect for the future do create monumental individual and social problems, and significantly reduce an individual's drive to achieve. The aim of a resource based economy is to encourage and develop a new incentive system, one no longer directed toward the shallow and self-centered goals of wealth, property, and power. These new incentives would encourage people to pursue different goals, such as self-fulfillment and creativity, the elimination of scarcity, the protection of the environment, and the alleviation of suffering in their fellow human beings.

People, provided with good nutrition in a highly productive and humane society, will evolve a new incentive system unattainable in a monetary system. There would be such a wealth of new wonders to experience, explore, and invent that the notion of boredom and apathy would be absurd. Incentive is often squelched in our present culture, where a person dare not dream of a future that seems unattainable to him or her. The vision of the future that too many see today consists of endless days of mindless toil, and a wasted life, squandered for the sake of merely earning enough money to survive from one day to the next.

Each successive period in time creates it's own incentive system. In earlier times the incentive to hunt for food was generated by hunger; the incentive to create a javelin or a bow and arrow evolved as a process supportive to the hunt. With the advent of an agrarian society the motivation for hunting was no longer relevant, and incentives shifted toward the cultivation of crops, the domestication of

animals, and toward the protection of personal property. In a civilization where people receive food, medical care, education, and housing, incentives would again undergo change and would be redirected: People would be free to explore other possibilities and lifestyles that could not be anticipated in earlier times.

The nature of incentive and motivation is dependent upon many factors. We know, for example, that the physical and mental health of an individual is directly related to that person's sense of self-worth and well-being. Furthermore, we know that all healthy babies are inquisitive; it is the culture that shapes the particular kind of inquiry and motivation. For example, in India and other areas of great scarcity there are many people who are motivated not to accumulate wealth and material property; they renounce all worldly goods. Under the conditions in which they find themselves, this is not difficult. This would seem to be in direct conflict with other cultures that value the accumulation of material wealth. Yet, which view is more valid? Your answer to this question would depend upon your frame of reference, that is, your culturally influenced value-system.

Many experimental psychologists and sociologists have shown that the effects of environment play a major role in shaping our behavior and values. If constructive behavior is appropriately rewarded during early childhood, the child becomes motivated to repeat the rewarded behavior, provided that the reinforcement meets the individual needs of the child. For example, if a football were given to a child who is interested in botany, this would not be a reward from the child's point of view. It is very unfortunate that so many individuals in our society today are not appropriately rewarded for their creative efforts. In some instances individuals are seemingly able to overcome the shortcomings of their environment in spite of an apparent lack of positive reinforcements. This is due to their own "self-reinforcement" in which they can see an improvement in whatever activity they are engaged in, and achieve an intrinsic sense of accomplishment; their reinforcement does not depend on the approval of others, nor on monetary reward. Those children who do depend on the approval of a group tend to be afflicted with a sense of low self-esteem, while children who do not depend on group approval usually acquire a sense of self-approval by improving upon their own performance.

Throughout history, there have been many innovators and inventors who have been ruthlessly exploited, ridiculed, and abused while receiving very little financial reward. Yet, they endured such hardship because they were motivated to learn and to discover new ways of doing things. While creative individuals like Leonardo de Vinci, Michelangelo, and Beethoven received the generous sponsorship of wealthy patrons, this did not diminish their incentive in the least. On the contrary, it empowered them to reach new heights of creativity, perseverance and individual accomplishments.

This is a difficult concept to grasp because most of us have been brought up with the value system that has given us a set of notions about the way that we ought to think and behave about money and motivation. These are based upon ancient ideas that are really irrelevant today.

It has been stated that war generates creativity. This deliberately falsified concept has no basis in fact. It is government financing of war industries that helped to develop many new materials and inventions. There is no question that a saner society would be able to create a more constructive incentive system if our knowledge of the conditions that shape human motivation were applied.

In this new social arrangement of a resource-based economy, motivation and incentive will be encouraged through recognition of, and concern for, the needs of the individual. This means providing the necessary environment, educational facilities, nutrition, health care, compassion, love, and security that all people need.

THE HUMAN ASPECT

In today's society, there is much concern about the dissolution of the conventional core family structure, and the societal values associated with it. The family is seen as the primary, most basic venue for acquiring such life skills as caring, sociability, responsibility, stability and concern for others. The increasing unrest and lack of direction exhibited by many young people today seem to validate these concerns.

At present, it is necessary for both husbands and wives to work. Monetary economics have to a large extent undermined family cohesion. Parents lack adequate time to spend with their children, and they are constantly stressed by ever-rising medical bills, insurance payments, educational expenses, and the high cost of living. It is in this area that one of the most profound benefits of this new civilization could be realized. The proposed shorter workdays would provide more time for family relationships. Free access to goods and services would make the home a much more pleasant place, with the removal of economic stress that causes so much family turmoil.

With the enhanced level of sociability that would naturally come from not having to compete for access to goods and services, we would see a tendency toward extension of the family unit into the community. As may already be observed in other cultures, the rearing and development of children would become the responsibility of both the family and the community at large.

With the elimination of debt, the fear of losing one's job will no longer be a threat; this assurance, combined with education on how to relate to one another in a much more meaningful way, could considerably reduce conflict and stress both mentally and physically. When education and resources are available to all without a price tag, there would be no limit to the human potential.

The fear of uniform behavior in a cybernated resource-based economy of the future is unfounded. The only uniformity one would find would be a concern for the environment and the importance of extending maximum courtesy to all nations and to one another. All would likewise share an intense curiosity for all that is new and challenging. With a better understanding, people could possess a flexibility of outlook unknown in previous times, free of bigotry and prejudice. In addition, the people of this innovative society would have concern for their fellow human beings, and for the protection, maintenance, and stewardship of the Earth's natural environment. Additionally, everyone, regardless of race, color, or creed would have equal access to all of the amenities that this highly productive culture could supply.

In more advanced and humane systems of education people would acquire this new type of value system. They would also realize the many advantages of cooperation rather than competition. In a society without vested interest it would

be impossible to harness the talents of scientists and technicians to engage in weapons research or any other socially hostile endeavor. We call this approach "functional morality." This newer, more humane, and more productive approach would advocate finding non-military solutions to international differences. This calls for a global view, which would be a considerable improvement over narrow national and self-interests. We could use knowledge and information as tools that would be surrendered when evidence of more appropriate methods are introduced.

Some people question the morality of seemingly receiving something for nothing. At a recent college lecture one student was opposed to the idea of "getting something for nothing." I then asked him if he were paying his own way through school, or if his parents were paying for him. He admitted that his parents were. I also pointed out that if he really did believe that people should not receive something for nothing, then in the event of the death of his rich relative he would prefer that their inheritance be left to the heart or cancer fund, rather than being passed on to him. But the student, needless to say, was opposed to this idea.

By merely being born in a developed country, we have access to many things that we put no effort whatsoever towards, such as the telephone, the automobile, electricity, running water, etc. These gifts of human ingenuity and invention do not degrade our lives, but rather they enrich and enhance us. What degrades us is our lack of concern for those unfortunate enough to experience poverty, hunger, and homelessness. The social designs that are proposed in this writing merely provide the opportunity for individuals to develop their fullest potential in whatever endeavor they choose without the fear of loss of individuality or submission to uniformity.

A resource-based economy by definition includes the participation of all people in its benefits. In a monetary system there is an inherent reason for corruption and that is to gain a competitive advantage over someone else. Without vested interests or the use of money, there is no benefit to squelching one's opinion or falsifying information or taking advantage of anyone. There would be no need for any underlying rigid social barriers that would limit the participation of anyone or restrain the introduction of new ideas. The main objective is the access of information and the availability of goods and services to all people. This would enable people to be prepared to participate in the exciting challenges of this new society. A resource-based economy could create an environment that would encourage the widest range of individuality, creativity, constructive endeavor, and cooperation without any kind of elitism, technical or otherwise. Most significantly, a resource-based economy would generate a far different incentive system, one based on human and environmental concern. This would not be a uniform culture but one that is designed to be in a constant process of growth and improvement.

As we enhance the lives of others, protect our environment, and work toward abundance, all our lives can become richer and more secure. If these values

were put into practice it would enable all of us to achieve a much higher standard of living within a relatively short period of time--one that would be continuously improved. At a time when commercial institutions no longer exist, the necessity for prisons, lawyers, advertisements, banks and the stock exchange will serve no useful purpose. In the society of the future, in which the monetary system of scarcity has been surpassed by a resource based economy and most physical and creative needs are met, private ownership as we know it would cease to be a necessity to protect one's access to goods and services. The concept of ownership would be of no advantage whatsoever in a society of abundance. Although this is difficult for many to imagine, even the wealthiest person today would be immensely better off in the highly productive resource-based society. Today in developed countries the middle class live far better than kings and the wealthy of times past. In a resource based economy everyone would live richer lives than the powerful and wealthy of today, not only materially but spiritually as well.

People would be free to pursue whatever constructive field of endeavor they choose without any of the economic pressures, restraints, debts and taxation that are inherent in the monetary system of today. By constructive endeavor, we mean anything that enhances the lives of the individual and others while protecting the global environment. When education and resources are available to all without a price tag, there would be no limit to the human potential. With these major alterations people would be able to eventually live longer, more meaningful, healthier and productive lives. In such a society, the measure of success would be based on the fulfillment of one's individual pursuits rather than the acquisition of wealth, property, and power.

The Venus Project

The Venus Project is an organization that is founded on the ideas, designs, and direction presented here. It represents many years of research and dedication on the part of its originator and Project Director, Jacque Fresco. Its 25-acre research and design center is located in Venus, Florida where the future is taking shape today. The function of The Venus Project is to design, develop, and prepare plans for the construction of an experimental city based on the -principles outlined above. Here we have constructed nine experimental buildings, are developing alternative energy systems, city designs, transportation, manufacturing systems, and more. In support of this research we are creating blueprints, renderings, and models, holding seminars, producing books, videos, and other written material to introduce people to the aims of The Venus Project. The Venus Project is in the process of introducing a set of values and procedures that may enable us to achieve social transformation. The Venus Project will provide the designs and blueprints for a prototype community to test the validity of its social proposals and to establish a permanent planning center that could be used for future short-term and long-term project planning. It also proposes a relevant orientation for people to be able to adapt intellectually and emotionally to our new technological age. Anything short of overall social design would be inappropriate and far less effective. Our proposals will be submitted to the general public and all educational institutions, and we invite their participation. If enough people find the proposals acceptable and choose to join with us in this new advocacy, this could help to form the nucleus of an organization to further the aims of The Venus Project.

The circular configurations of the new cities as proposed by The Venus Project are not merely stylized architectural conceptualizations, but are the results of years of research to provide an environment that would best serve the needs of the occupants in an efficient and economical manner. Without sufficient knowledge of the symbiotic interrelationship between humanity and the environment, it would be extremely difficult to develop workable solutions to our many problems. In the planning of this new city The Venus Project has taken this and many other factors into careful consideration and study. This new experimental city would be devoted to working towards the aims and goals of The Venus Project, which are:

1. Conserving all the world's resources as the common heritage of all of the Earth's people.
2. Transcending all of the artificial boundaries that separate people.
3. Evolving from a monetary-based economy to a resource-based world economy.
4. Reclaiming and restoring the natural environment to the best of our ability.

5. Redesigning our cities, transportation systems, and agricultural and industrial plants so that they are energy efficient, clean, and conveniently serve the needs of all people.
6. Evolving towards a cybernated society that can gradually outgrow the need for all political local, national, and supra-national governments as a means of social management.
7. Sharing and applying all of the new technologies for the benefit of all nations.
8. Using clean, renewable energy sources such as wind, solar, geothermal, and tidal power, etc.
9. Ultimately utilizing the highest quality products for the benefit of all the world's people.
10. Requiring environmental impact studies prior to construction of any mega-projects.
11. Encouraging the widest range of creativity and incentive toward constructive endeavor.
12. Assisting in stabilizing the world's population through education and voluntary birth-control to conform to the carrying capacity of the earth.
13. Outgrowing nationalism, bigotry and prejudice through education.
14. Eliminating any type of elitism, technical or otherwise.
15. Arriving at methodologies by careful research rather than random opinions.
16. Enhancing communication in the new schools so that our language and education is relevant to the physical conditions of the world around us.
17. Providing not only the necessities of life but also offering challenges that stimulate the mind, emphasizing individuality rather than uniformity.
18. Finally, preparing people intellectually and emotionally for the possible changes that lie ahead.

Like all other innovative social proposals, it starts out with a few devoted people that dedicate their time to informing others of the humane benefits of this new direction. People are invited to participate in whatever capacity they can to help carry out the initial design phases of this new experimental city. An interdisciplinary team of systems engineers, computer programmers, architects, city planners, sociologists, psychologists, educators and the like would also be

needed. The design of The Venus Project does not regard environmental conditions as fixed or static. We must allow for adaptation and change within the system as a continuous process. This would avoid the tendency to perpetuate temporary arrangements beyond their period of usefulness.

The circular city proposed by The Venus Project would be a transitional phase and could evolve from a semi-cooperative money-oriented society to a full resource-based economy. This could be the prototype for a series of new cities to be constructed in various places throughout the world. The rate of progression will depend upon the availability of funds raised during the early stages and the people who identify, participate, and support the aims and direction of The Venus Project. As these new communities develop and become more widely accepted, they may very well form the basis of a new civilization, preferably through the process of evolution rather than revolution. We are well aware that no one can actually foretell the shape of the future. We can only extrapolate on present information and trends. Population growth, technological change, worldwide environmental conditions, and available resources are the primary criteria for future projections. We are also aware that there is no single philosophy or point of view -- religious, political, scientific, or ideological -- that someone would not take issue with. We feel certain, however, that the only aspects of The Venus Project that may appear threatening are those that others project into it.

The Venus Project is neither Utopian, nor Orwellian, nor does it reflect the dreams of impractical idealists. Instead, it presents attainable goals requiring only the intelligent application of what we already know. The only limitations are those we impose upon ourselves.

The Venus Project does not advocate dissolving the existing free-enterprise system. We believe it will eventually evolve towards a resource-based society of common heritage in due course. All that The Venus Project offers is an alternative approach for your consideration.

It is not possible in this short writing to present the precise methodology and operation of a global resource based economy. We encourage you to become better informed about the proposals of this project through our books, videos, lectures and seminars. If you identify with this direction, we welcome you to join with us and work towards its realization.