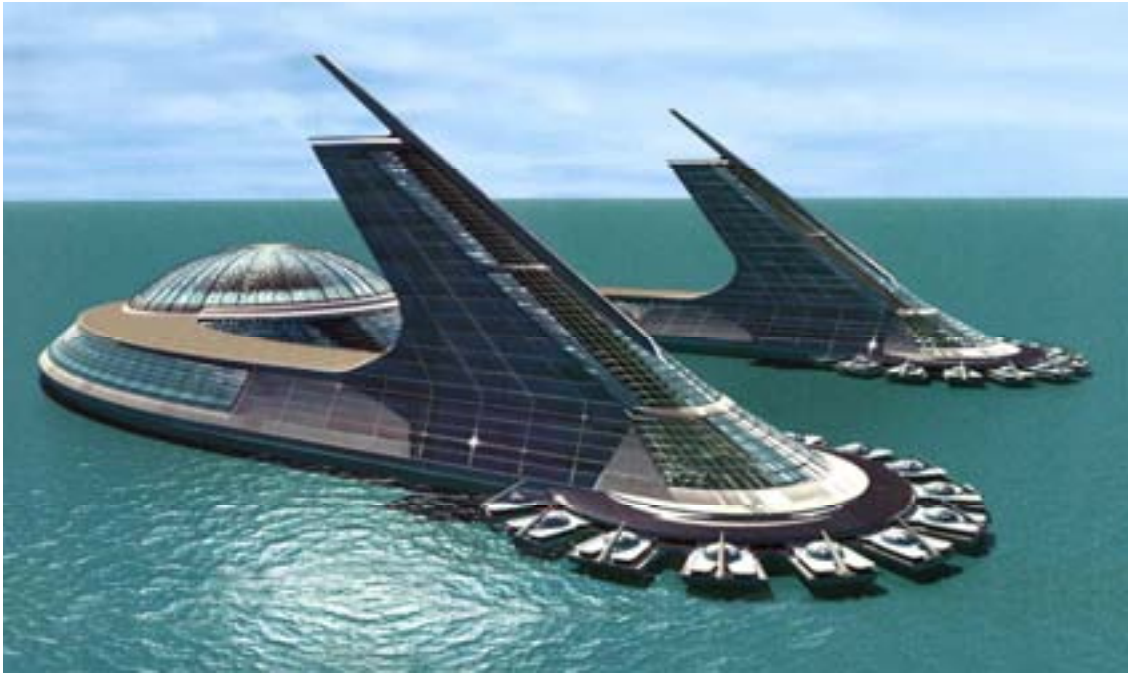


DESIGNING THE FUTURE



BY

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SPECIAL THANKS TO

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INTRODUCTION

A Future by Design

Are you prepared to design the future?

Although many of us feel we can prepare for our future by thinking, acting, and learning using present methods and values, nothing is farther from the truth – especially in today's rapidly changing world. A newborn child enters a world not of his or her own making. Each succeeding generation inherits the values, accomplishments, hopes, successes, and failings of previous generations. And they inherit the results of the decisions made by those generations.

For the hundreds of thousands of years of human existence when technologies were simple or non-existent, this may have had little impact on human life and the earth that sustains it. Each generation of hunters and gatherers, then plowmen and pioneers, passed on tools to the next generation to help them survive. Change from one generation to the next was slow and hardly noticeable. In those days there was little understanding of science and how things worked, and explanations were not scientific.

This is no longer the case in today's high-tech world where a change that affects millions may happen in a matter of seconds. A child born today inherits a world vastly different from that of its parent's generation, let alone that from centuries ago. Previous generations left a legacy of, exploitation, occupation, and irrelevant values that present great challenges, but also opportunities to the people of today.

The application of scientific principles, for better or worse, accounts for every single advance that has improved people's lives. Important documents and proclamations have been issued granting rights and privileges to members of societies, but at the heart of human progress – or destruction – is the rock-solid foundation of science.

For generations past it was impossible to direct the future much beyond the present moment, and forecasts of the future were based on non-scientific methods. Prophets and sages presented visions of the future based on dreams, hallucinations, religious fervor, divination of animal

parts, crystal balls, etc. Some may even have been accurate, but this was more because of luck than because of any direct channel to the supernatural.

Now satellites circle the globe beaming down information in fractions of a second about everything that impacts our lives. This information is very valuable for projecting weather patterns, high and low points, geological hot and cold spots, where people live, and the warming of the planet. This has given us, for the first time, the ability to monitor the health of the planet, which many scientists see as in serious, if not critical, condition.

In a single day, trillions of bits of scientific data zip through cyberspace at light-speed, making a high-tech civilization possible. While physical science and technology silently direct much of the action, millions of people around the globe still practice pseudo-science, using fortune-tellers, seers, and philosophers for their daily direction. Many world leaders regularly consult psychics, mediums, and astrologers for guidance in decisions that determine the fate of millions.

Present human activity and its consequences does not *have* to be shaped by the needs and values of our ancestors. In fact, it *must* not be. For instance, armed conflict between nations is still seen by many as the only way to settle differences. It is especially promoted by those who profit handsomely from the sale of armaments. This is now totally unacceptable and dangerous because of war's extreme human and environmental costs.

A militant viewpoint is obsolete once we view the world as a whole interrelated system with all its people as one family. Managing accelerating changes in technology and managing ourselves require new outlooks and approaches. This is now both necessary and possible because of technological change.

These lessons are designed to challenge the reader to direct the future; not just one's own, but that of society in general; and not just for one's own generation, but for those to follow. Not only is science making it possible, it is now vital.

YOUR CHALLENGE

The future does not just happen. Except for natural events like earthquakes, it comes about through the efforts of people and is determined largely by how well informed people are. You can play a role in the shaping of tomorrow's world by asking yourself questions like, "What kind of world do I want to live in?" and "What does democracy mean to me?" There are many other options of organization for the future than those typically discussed today.

Here is a scenario for you to consider: Suppose you were called upon to redesign planetary civilization without any limitations based on how things are done today. The goal is to help rid the world of war, poverty, hunger, and environmental degradation, and to create the best world for all inhabitants, given the resources at hand, for the longest period of time.

Remember, you are free to rearrange society in any way you think will work. The only limitation is that your social design must factor in the carrying capacity of the planet, which means the resources have to be sufficient to support life on the planet.

You can rearrange the entire civilization to make what you consider the best of all possible worlds, bearing in mind that any unmet need for any segment of the population reduces the standard of living for all. This may include not only environmental protection, but also city design, transportation, interpersonal relationships and the restructuring of education, if you feel it is necessary.

The options are limitless. Would you have separate nations? Would you have an international advisory board? How would you manage and distribute the resources of the world to accommodate the needs of all? Would you use the scientific method to make decisions, or rely on politics or mysticism? How would you handle differences in religious beliefs? You may even consider another system of distribution that doesn't use money as a medium of exchange.

On a personal basis, would you seek a position of advantage over others? Would you claim a bigger house, a more luxurious car, or high-definition TV? On what basis would you say you deserve these things? Or that others

don't deserve them? Your skill level? Your investment of time and/or money?

Remember, if you force any predetermined set of values on other nations, or others in your own nation or neighborhood for that matter, you will generate bad feelings. How would you prevent political corruption? Would you declare universal laws and treaties? Would you use military and police methods for enforcement? Would you declare all resources the common heritage of all nations?

In order to accomplish this task one must be free of bias and nationalism, and reflect those qualities in the design of policies. How would you approach that? This is a difficult project requiring input from many disciplines.

These are some of the problems we must consider when thinking about such a task. It can be a fresh approach, unburdened by past or traditional considerations, religious or otherwise, but always keeping in mind for whom this society is to be designed. Feel free to transcend present realities and reach out for new and creative ideas.

Chapter One

From Yesterday to Tomorrow

A little background before considering this challenge:

The lives of most men and women are blighted by problems they cannot solve. Many events in our lives are the result of things beyond our control. While it is comforting to think, "I'm in charge," in truth most changes effected by individuals are very limited in scope. People usually blame themselves or "fate." However, when two cars collide at an intersection, should we blame the individual drivers, "fate," or the way transportation is engineered so that it permits collisions in the first place? Are we, as an individual, in charge if the automobile colliding with us is the product of poor design?

In 2005 there were 43,200 thousand deaths in the US from car accidents, plus hundreds of thousands of injuries. But consider another way we get people from one place to another – the elevator. How many people have been killed in collisions between elevators? These devices carry millions of people every day without a single mishap because of their intelligent design. How might highway transportation be similarly arranged?

If you believe that transportation should be designed so that it is almost impossible for anyone to be killed or injured in a collision, these lessons are for you. If you believe that scientific investigation can find out how to restructure society to give each individual a greater opportunity for self-realization and fulfillment, then you will probably appreciate these ideas.

To get the most out of these ideas you will have to blend open-mindedness with skepticism. It is hard enough to face the problems of our own time; it is even more difficult to understand the fantastic and shocking changes that may occur in the future.

Suppose an intelligent man in New York a hundred years ago sat down one evening with a book predicting life a century later. He would refuse to believe that almost everyone in 2006 would be able to operate a horseless carriage that could zip about at 60 miles per hour or more. He may have thought the designers had gone too far.

He would smile smugly at the ridiculous prediction of man-made flying machines traveling faster than the speed of sound. The thought of sending pictures and sounds throughout the world instantly would have sounded impossible to such a person a hundred years ago. It would have seemed incredible to him that war would develop to the point where one small bomb, directed in real time from half way around the world, could destroy an entire city with pin-point accuracy. Our early 20th century gentleman would have been alarmed that part of his wages could be withheld to provide for retirement.

At this point let us leave our gentleman muttering to himself about the world moving too fast and a future that has gone too far.

Are we any more flexible or farsighted today? In order to design a future of positive change, we must first become expert at changing our minds. The differences between the nineteenth and the twentieth centuries will probably be small compared to the changes that will take place in the rest of our own century.

Students will understand these ideas best if they can see today as a stepping-stone between yesterday and tomorrow. They will also need sensitivity to the injustices, lost opportunities for happiness, and deadly conflicts that characterize our twenty-first century civilization.

We have no crystal ball for the rest of the twenty-first century. We want you to feed these ideas into your own mental computer and experience. You may find even better ideas that can play a part in molding the future of our civilization. In the rest of these pages, we'll explore unfamiliar, alarming, exciting, and attainable possibilities for the design of the future.

A Crisis That Needs to be Addressed

One would think that with our technology we could eliminate most social ills. Couldn't modern technology supply enough food, clothing, shelter, and material goods for all if used intelligently? What is stopping us from achieving this? Technology is racing forward but our societies are still based on concepts and methods devised centuries ago. We still have a society based on scarcity and the use of money. We still have thinking patterns based on old structures used in western Asia several thousand years ago. We are trying to adjust to the rapid advances in technology with obsolete values that no longer work in today's world.

Because of tremendous advantages given corporations by lawmakers who owe them their positions, monopolies are gaining more control. The comforting assumption that "I can make a difference" is farther and farther from reality. Fewer corporations own more and more companies. Many of the same people sit on the boards of various major corporations besides their own. The corporations that own car and aircraft companies may also own food, radio, TV stations, magazines, pharmaceuticals, manufacturing, and armament companies. Ten major lending institutions control virtually all the credit cards in the U.S. The wealth and influence of these corporate elite can not be equaled or countered by the workers who enabled them to acquire such wealth. With media companies today owned and sponsored by large corporations, it is difficult to know whether the news can be trusted.

According to many polls, a majority of scientists think that the human race is on a "collision course" with nature, that all of Earth's ecosystems are suffering, and that the ability of the planet to sustain life is in serious jeopardy. (1) There is a threat of rapid global climate change that will certainly have profound consequences. The pollution of rivers, land, and the air we breathe threatens our health. We are destroying non-renewable resources like topsoil and the ozone layer instead of using these resources intelligently.

We face common threats that transcend national boundaries: overpopulation, energy shortages, water scarcity, economic catastrophe, the spread of uncontrollable diseases, and the technological displacement of people by machines, to name a few. Eight hundred and fifty two million people across the world are hungry. Every day, more than 16,000 children die from hunger-related causes- one child every five seconds. (1) World wide more than 1 billion people currently live below the international poverty line, earning less than \$1 per day. (2) A very small percent of the people own most of the world's wealth and resources. The gap between the rich and poor is widening. In the US as of 2002, the average CEO made 282 times as much as the average worker. (3) In 2005 the compensation of CEOs of major U.S. corporations rose 12% to an average of \$9.8 million per year. Oil company CEOs did even better with raises that averaged a whopping 109% to \$16.6 million per year. Meanwhile, workers' salaries barely kept up with inflation in most industries and occupations across the U.S. In Oregon, minimum wage workers saw their pay rise by a modest 2.8% to \$15,080 per year.

What has been handed down to us does not seem to be working for the majority of people. With the advances in science and technology over the last two hundred years, you may be asking: "does it have to be this

way?" With the observable fact that scientific knowledge makes our lives better when applied with concern for human welfare and environmental protection, there is no question that science and technology can produce abundance so that no one has to go without. But the misuse and abuse of technology seems to make things worse.

The problems we face in the world today are mostly of our own making. We must accept that our future depends on *us*. While the values represented by religious leaders over the centuries have inspired many to act in a socially responsible manner, others have gone to war over their differences in religious beliefs. Hopes for divine intervention by mythical characters are delusions that cannot solve the problems of our modern world. The future of the world is our responsibility and it depends upon decisions we make today. We are our own salvation or damnation.

The shape and solutions of the future rely totally on the collective effort of people working together. We are all an integral part of the web of life. What affects other people and the environment has consequences in our own lives as well.

What is needed is a change in our sense of direction and purpose -- an alternative vision for a sustainable new world civilization unlike any in the past. Although this vision is highly compressed here, it is based on years of study and experimental research.

These writings offer possible alternatives for striving toward a better world. It arrives at decisions using the scientific method. Like any new approach, it requires some imagination and a willingness to consider the unconventional in order to be appreciated. Remember that almost every new concept was ridiculed, rejected, and laughed at when first presented, especially by the experts of the time.

That's what happened to the first scientists who said the earth was round, the first who said it went around the sun, and the first who thought people could learn to fly. You could write a whole book, and many have, just on things that people thought were impossible up until the time they happened. Imagine going to the moon, for example! Your great-grandparents would have laughed at such a notion! Such notions were the ramblings of science fiction writers. Many forward thinking people have been locked up and even executed for saying such things as the earth wasn't the center of the universe.

Those who fought for social justice and change had even greater difficulties. People advocating change were beaten, abused, put in

prison, and brutally murdered. For example, Wangari Maathai, who was awarded the 2004 Nobel Peace Prize on December 10, 2004 was tear gassed, beaten unconscious, and imprisoned for fighting against deforestation in Kenya, Africa. Dianne Fosse, the naturalist who actively strived to protect declining gorilla populations from poachers, was found hacked to death in her hut. Unfortunately she did not provide for the needs of the poachers. Any number of volumes could be written on the hardships endured by those who sought change that threatened the status quo.

(1) [The world hunger problem: Facts, figures and statistics](http://library.thinkquest.org/C002291/high/present/stats.htm)
<http://library.thinkquest.org/C002291/high/present/stats.htm>

(2) Hunger Report 2004. Bread for the World Institute
[Hunger Facts: International](#)

(3) Capital Connection
<http://www.oraficio.org/cgi-bin/display.cgi?page=CapConnect42505>

Chapter Two

All Things Change

In our dynamic universe all things change, from the farthest reaches of outer space to the movement of continents. Change occurs in all living and nonliving systems. The history of civilization is the story of change from the simple to the more complex. Human ingenuity and invention bear witness to this fact. No system can remain static for long; most of the monarchies have been replaced by other forms of government and societies based on the will of the people, not kings, have evolved. Unfortunately, the changes are not always for the best.

Although we accept the inevitability of change, humans meet it with a lot of resistance. In most cases, change threatens those in positions of advantage and for the most part they are there in the first place to keep things the way they are. This is true for any society, whether the power structure is religious, military, socialist, capitalist, communist, fascist, or tribal. The leaders will attempt to hold back change. Sometimes, even when conditions are terrible for the majority of people, the people themselves may resist change because there is comfort in the familiar. We refer to them as the un-appointed guardians of the system.

But no matter how much people resist, human civilization is no exception to the fact of change. Change occurs in all social systems, and is the only constant. We can be sure that the history of humankind is one of change.

Yet at every turn, vested interests (those who have the most to gain in keeping things the way they are) oppose even technological changes. For example, earlier in the twentieth century, defenders of the horse-mounted cavalry delayed development of the tank. So entrenched was this tradition that when Germany invaded Poland in 1939, their tank division faced Polish soldiers still mounted on horseback.

It was obvious that the horse soldiers did not stand a chance. The development of aircraft threatened tank divisions. Then pilots and aircraft designers fought to hold back the development of guided missiles. The missile men fought to hold back the development of laser weapons. And so it goes.

If we wonder why we are still faced with many of the same problems our ancestors had when our technological capabilities so surpass theirs, we must consider that we have been here such a short time that we could almost be called "newborn." If you were to use a twenty-four hour clock to represent the time since life began on earth, it would show that humans have only been in existence since the last minute of the twenty-fourth hour. Only during the last few seconds of the last minute have modern humans begun to use scientific methods to find out the most effective ways of getting things done. We are just now beginning to hit our stride. More new knowledge has been created from the beginning of the twentieth century to the present than in the previous billion years. Change is almost everywhere.

If life at times seems bewildering - if you feel pulled in many directions, if you find that no matter what you do, you still have sticky problems, if you find that our economic, political, and social ways of doing things sometimes create more difficulties than they solve - then you are simply playing your part in suffering through the present transitional phase of our civilization.

Chapter Three

Using the Scientific Method

What Have We Here

Until scientific inquiry came of age, human beings could not comprehend their relationship to the physical world, so they invented their own explanations. These explanations tended to be simplistic and in many cases harmful. For example, if one knows a tidal wave is approaching and chooses to stay and pray for deliverance rather than leaving, this could be detrimental to his/her survival. People used to believe that plagues and diseases were retributions of an angry God, but the scientific method found that many diseases were carried by rats and lice, and caused by germs.

It is not that scientists are close-minded regarding these issues—it's just that their acceptance of ideas requires more sophisticated standards and methods of inquiry.

The scientific method helps to diminish biases, prejudices, and preconceived notions. The method requires that statements be verified and that researchers find out through experimentation just what works and what doesn't. Scientists ask the question "what do we have here?" and then they proceed to do experiments to determine the nature of the physical world.

This process requires that experiments be verified by others who must get the same results. One of the major developments in science was the realization that we can not acquire answers to problems just intuitively. It requires painstaking laborious effort and time to find solutions and answers. Often many failures come before any new findings.

The Language of Science

The communication of ideas and information usually starts with language, but when you see how misunderstood you may be in daily life, you know this can be a confusing task. Our everyday language evolved through centuries of cultural change and unfortunately, it is difficult to resolve conflicting ideas by using it. In most instances, because of varying

backgrounds and life experiences, the same word can have different meanings for different people. One's thoughts may be interpreted differently by others even when using the same language.

But there is a language that is easily understood by many, even in different parts of the world. This language has a *high degree of physical correlation with the real world*. There is little to no confusion in it. In different scientific fields such as engineering, mathematics, chemistry, and other technical areas, we have the nearest thing to a descriptive universal language that leaves little room for one's own unique interpretation.

For instance, if a blueprint for an automobile is given to any technologically developed society anywhere in the world, regardless of political or religious belief, the finished product will be the same. This language was deliberately designed as a more appropriate way to state a problem. It is nearly free of vague interpretations and ambiguities.

Many of the great technical strides made in our modern day would have been unattainable without this improved communication. Without a common descriptive language, we would have been unable to prevent diseases, increase crop yields, talk over thousands of miles, or build bridges, dams, transportation systems, and the many other technological marvels of this computerized age.

Applying and understanding General Semantics is essential to improving communication. Semantics has been defined in many different ways. Briefly, it is an attempt to improve communication through the careful use of language. For example, terms like "Arab", "Jew", or "Irishman" have slightly different meanings to different people. Similar words have various meanings depending on differences in background and experience. This also applies to words like understanding, conscience, democracy, reality, love, etc. To have intelligent discussions using certain words, it is essential to ask what one means by the words being used. If one wishes to communicate in a meaningful way, it is best to have people define their terms. Semantics is just one instrument that may help improve communication. A useful book for this subject is *Tyranny of Words* by Stuart Chase.

Can we apply the Methods of Science to how we Design our Society?

The discovery of scientific principles enables us to validate and test many proposals. If someone claims that a certain structural element can support a specific number of pounds per square inch, this statement can be tested and either accepted or rejected based on the test results. It is this

testing which enables us to design and construct bridges, buildings, ships, aircraft, and other mechanical wonders.

Almost everyone you know will go for the scientific way when it comes to surgery, airplane rides, or building things like skyscrapers, bridges, and cars. Over the centuries, we seem to have developed a consensus that when it comes to matters of personal safety, we will go with the science rather than the magic. Why is that? Probably because it works, and everybody can see that it does.

Then why don't we do that when it comes to planning our societies: our cities, transportation systems, agriculture, health care, and so on? If you thought we were *already* doing all those things scientifically, look again! If science has a lot to do with what works, then clearly there's much about today's social and economic setup that isn't scientific, because things aren't working very well for a majority of the world's population or the environment. If they were, war, poverty, hunger, homelessness, pollution, etc., would not be so prevalent today. Unfortunately our social structures evolved with no overall global planning.

One condition for the assignment of redesigning society is that your social design must live within the carrying capacity of our planet. This means our resources have to support life on the planet for everyone. This will certainly require scientific methods of evaluation.

If one wishes to put a person on the moon, one cannot just build a rocket and head for the moon. We must first test what forces the human body can stand. We would put a person in a centrifuge to see just how many "G's" the body can withstand. We would put a person through a barrage of tests. For instance, we would test to see how the body functions in a gravity-free environment and the effects on human health. We would also need to have information about survival possibilities on the moon; for example, is there water, air, an acceptable temperature range, etc.

In much the same way we must look at the entire planet as a whole and ask "what have we here?" We want to apply this same intelligent method of planning using a scientific system of Earth sciences for planetary survival. The degree to which we *don't* apply this scientific method to the way we live on Earth may very well determine the unnecessary amount of suffering that will occur.

How do we do this?

Chapter Four

Existing Myths

The Rule of Law

Many people feel that we need the rule of law to eliminate our problems. But is it more laws that we need? We have many laws – thousands upon thousands of them - but they are constantly being broken.

For instance, there are thousands of laws against stealing. But if we examine this more closely and look at the statistics, we find that a few people control most of the earth's resources. Most people have insufficient money to purchase even the barest of necessities. How can we think that without altering these conditions, the passing of a law will prevent stealing? This is even more difficult when advertising makes products so enticing. Almost unknowingly, people in the US are exposed to over 2500 advertisements a day.

Even a peace treaty cannot prevent another war if the underlying causes are not dealt with. Laws for international cooperation do not deal with the reasons we need the laws -- they just tend to freeze things as they are. Regardless of treaties, nations that have conquered land all over the world by force and violence still retain their positions of territorial and resource advantage. Treaties are only a band-aid on the problems and usually only work to postpone conflict for a short time.

Perhaps what is needed are different people in government, ethical people who are concerned about others. Maybe they will wipe out corruption and work towards everyone's well-being. But even if the most ethical people were elected to high position and we ran out of resources, there would still be lying, cheating, stealing, and corruption. *It is not ethical people that are needed but rather a way of intelligently managing the Earth's resources for everyone's well-being.*

Examining the Conditions that Cause the Problems

Perhaps the problem lies elsewhere than in the enactment of more laws or appointing ethical people to government. Perhaps we should look at how we currently obtain and distribute the goods that we need.

This is done by “earning” money, either by exchanging one’s time, skills, and efforts, or by “investing” in the financial system with the thought of getting more money in return, and exchanging that money for goods and services. This may have been a good method in the past when goods were scarce and technology was in its infancy, but today our advanced technologies could be the tools for a very different scenario.

If we look at things scientifically, there is more than enough food and material goods on Earth to take care of all people’s needs – if managed correctly. There is enough to enable everyone to have a very high standard of living with the intelligent use of technology, resources, and technical personnel. When we say the use of technology, we mean technology that is not harmful to people or the environment and doesn’t waste time and energy.

Consider this: when there is a recession and people have little money to buy things, isn’t the Earth still the same place? Aren’t there still goods on the store shelves and land to grow crops? It is just the rules of the game that we play by that are obsolete and cause so much suffering.

The existence of money is hardly ever questioned or examined, but let’s consider our use of money. Money itself does not have any value. It is just a picture on a cheap piece of paper with an agreement among people as to what it can buy. If it rained hundred dollar bills tomorrow, everyone would be happy except the bankers.

There are many disadvantages to using this old method of exchange for goods and services. We will consider just a few here and let you add to this list on your own.

1. Money is just an interference between what one needs and what one is able to get. It is not money that people need, it is access to resources.
2. The use of money results in social stratification and elitism based primarily on economic disparity.
3. People are not equal without equal purchasing power.
4. Most people are slaves to jobs they do not like because they need the money.

5. There is tremendous corruption, greed, crime, embezzlement, and more caused by the need for money.
6. Most laws are enacted for the benefit of corporations, which have enough money to lobby, bribe, or persuade government officials to make laws that serve their interests.
7. Those who control purchasing power have greater influence.
8. Money is used to control the behavior of those with limited purchasing power.
9. Goods such as foods are sometimes destroyed to keep prices up; when things are scarce prices increase.
10. There is tremendous waste of material and strain on available resources from superficial design changes for newer later fads each year in order to create continuous markets for manufacturers.
11. There is tremendous environmental degradation due to the high cost of better methods of waste disposal.
12. The Earth is being plundered for profit.
13. The benefits of technology are only distributed to those with sufficient purchasing power.
14. Most important, when the corporation's bottom line is profit, decisions in all areas are made *not* for the benefit of people and the environment, but primarily for the acquisition of wealth, property, and power.

Next Phase in Social Development.

What is it that we all have in common? Where should our priorities lie? All nations and people, regardless of political philosophy, religious beliefs, or social customs, depend upon natural resources; we all need clean air and water, arable land for food, and the necessary technology and personnel to maintain a high standard of living. Perhaps we should update the way society works so everyone on earth can take advantage of our technological ability to maintain a clean environment and a high standard of living. There is not enough money to begin to pay for this type of change, but there are more than enough resources on Earth to create it.

To review: the Earth has abundant resources and our practice of rationing these resources through the use of money is an outdated method which causes much suffering.

It is not money that we need but the *intelligent management of the earth's resources for the benefit of everyone*. We could best work towards achieving this by using a **resource based economy**.

Resource-based Economy

This is a very different concept than anything else put forth today. To put it simply, a resource-based economy uses resources rather than money, and people have access to whatever they need without the use of money, credits, barter, or any other form of debt or servitude. *All of the world's resources are held as the common heritage of all of Earth's people.*

The real wealth of any nation is not its money, but the developed and potential resources and the people who work toward the elimination of scarcity for a more humane society.

If this is still confusing to you consider this: If a group of people were stranded on an island with money, gold, and diamonds, but the island had no arable land, fish or clean water, their wealth would be irrelevant to their survival.

What if all the money in the world suddenly disappeared? As long as topsoil, factories, and other resources still remained, we could build anything we chose to build and fulfill our material needs. The bottom line is that money is not what people really need; rather, it is access to the necessities of life.

In a *resource-based economy*, resources are used directly to enhance the lives of our total population. In an economy based on resources rather than money, we can easily produce all of the necessities of life and provide a very high standard of living for everyone.

Chapter Five

From one System to Another

The Transition - Signs of the Times

Most people don't begin to look for an alternative social arrangement until theirs no longer works for them. A change from a system as entrenched in our culture as money will most likely require a collapse of the current system. Some things that are happening today could be signs that this collapse is already underway:

The industrialized nations of the world are installing more and more automated technology in order to compete with low prices in the global economy. The result of this new technology is that more and more people lose their jobs and can't take care of themselves and their families. With automation and cybernation used to their fullest potential, machines replace not only industrial workers, but also most professionals. Consequently, fewer people are able to buy the products that automated factories turn out.

A continuous outsourcing of jobs and manufacturing plants to overseas for cheaper labor, fewer environmental restrictions, and other benefits may seem good in the short run but will ultimately prove disastrous. It is likely that the loss of income for a majority of unemployed will become so great that they will lose their homes and possessions.

A number of scientists claim that by the year 2030, there will be a drastic shortage of easily extracted oil. Oil may not run out, but it may become monetarily and then physically impractical to extract it. Eventually, it will require more energy to drill for it and refine it than is practical. It is likely the same will happen with natural gas, only more rapidly.

These developments will create tremendous social and environmental disruptions as businesses scramble to protect their profit margins and exploit more of the earth's land, water, and natural resources. It may take the failure of the debt/money system for the majority of people to lose confidence in it. Then they can examine seriously how a global resource based-economy would operate, and envision what life would be like in

such a society. In the chapters that follow, we will glimpse the processes involved in adapting ourselves to this new way of life.

Chapter Six

Future By Design

Emerging Into a Saner Future

First Steps

To begin implementing a resource-based economy, social designers must utilize the scientific method and pose the question “What do we have here?” With the requirement that all be provided for in the most efficient, comfortable, and enduring manner possible, the first priority is making a purely technical assessment of basic needs of the total global population. The amount of housing, food, water, health care, transportation, education, and such needed, must be compared to the available resources the planet has to offer. This has to be balanced with the needs of other species that make up the web of life on Earth.

The main objective is to overcome scarcity and provide for the needs of all the world's people. In order to create a workable and sustainable civilization as quickly as possible, we need vast amounts of energy. What is desperately needed is an energy development strategy on a global scale, requiring a joint venture of international planning on a level never before achieved.

Energy

One of the most useful measures of the development of civilization is the amount of available energy per person. To a large extent the degree of physical comfort you enjoy today correlates with the energy at your disposal. Imagine the paralyses that would occur if your electricity and gasoline supply were cut off, and you had to use your own muscles to get things done.

The resource-based economy quickly goes to work on clean sources of energy. This is only possible when there are no more monetary limitations in the way of accomplishing or providing what's needed. With the restrictions of profit, property, and scarcity eliminated, research labs would quickly begin working together and sharing information freely. There would be no need for patents or proprietary information since the end goal is not to make money in order to continue working, but to achieve

results that are freely and quickly available to the planet's entire population.

This is a project that many people would be eager and grateful to work on, when the results immediately benefit all people. Interdisciplinary teams of qualified personnel, in line with the project's requirements, will work on energy and automated systems to produce and supply goods and services on a massive scale. Even the university students will help participate in arriving at fast methods of solving these problem.

These can be the armies of the future, a large peaceful mobilization to restore and preserve the earth and its people. This has never been done before and can only be done when money is no obstacle. The question is not do we have the money, but do we have the resources and means to accomplish this new direction.

During the transition from one system to another, scarcity regions are provided with heat concentrators for cooking and sterilizing water. Foods for those areas are dehydrated and compressed to save shipping space. The packaging is biodegradable and may double as non-contaminating fertilizers. Regions without arable land will use hydroponic farms, land-based fish farms, and sea farming. To conserve energy during the transition, instead of each family preparing food, there are food distribution centers with food shipped directly to homes and restaurants. These massive methods of supplying goods and services are applied throughout the world.

Vast sources of energy will be explored and developed. These include wind, wave and tidal action, ocean currents, temperature differentials, falling water, geothermal, electrostatic, hydrogen, natural gas, algae, biomass, bacteria, phase transformation, and thermionics (the conversion of heat into electricity by boiling electrons off a hot metal surface and condensing them on a cooler surface). Additionally, there is the potential of Fresnel lenses to concentrate heat.

Fusion energy is the same energy that drives the cosmos and the stars. When we learn how to harness it, the world's energy problems will be solved forever, without any detrimental effects or dangerous toxic materials to be disposed of. The only residue would be the clean ash of helium.

Oceanographers told us in the late twentieth century that if we tapped the vast energy potential of the world's oceans occupying 70.8% of the

earth's surface, we could easily meet present and future energy needs for millions of years to come.

A key element in the design of cities in the resource-based economy is the embedding of all necessary energy harnessing within the structure of the city itself. This will be further explained in the "City" section.

Another vast untapped energy option is the development of piezoelectric materials, or laminated systems inside cylinders, activated by the rise and fall of the tides.

Geothermal power, or power extracted from the heat of the earth, is being used throughout the world with tremendous success. Scientists predict that if we develop and harness only 1% of the geothermal energy available in the crust of the earth, our energy problems would be eliminated. With no monetary restriction in the resource-based economy, society would have the chance to prove those scientists right.

Geothermal energy can supply more than 500 times the energy contained in all the world's fossil fuel resources while reducing the threat of global warming. Geothermal power plants produce very little pollution compared to fossil fuels, and emit no nitrogen oxide or carbon dioxide. A relatively small area of land is required for the power plant itself. Without oil and natural gas companies controlling a monetary economy, geothermal power would become the most economical and efficient way to heat and cool buildings. If we were to apply just one tenth of what is currently spent on military equipment to the development of geothermal generators, we could have long ago solved our energy shortages.

In areas such as Iceland, geothermal energy is used to grow plants year round in enclosed areas. In the resource-based economy using this method, enormous amounts of fresh vegetables can be cultivated in all seasons. A similar process can be used for fish farming and in regions where heating and cooling are needed. Massive underwater structures could run a portion of the flow of the Gulf Stream through large turbines to generate clean electric power. The turbines would have a centrifugal separator and deflectors to prevent harm to marine life.

A land bridge or tunnel across the Bering Strait between Asia and North America could generate electrical power and collect and process marine products. Beneath and above the ocean surface would be tunnels to transport passengers and materials. Pipelines could bring fresh water from melting icebergs to other parts of the world. This structure

would not only provide a physical link between continents, but would also serve as an avenue for social and cultural exchange.

In our resource-based economy, there are comprehensive studies of the environmental and human impact before starting any large projects. The major concern is to protect and restore the environment for the benefit of all living creatures in the community of life. The purpose of the construction and development of these power projects is to free human beings from unnecessary laborious tasks. In order to achieve this society, we will need to automate most jobs as quickly as possible.



Harnessing the Gulf Stream

These underwater structures divert a portion of the flow of the Gulf Stream and other currents through turbines to generate clean electric power. The turbines are slow turning and would have centrifugal separators and deflectors to prevent harm to marine life.

Bering Strait Dam

A major development in the future could be the construction of a land bridge or tunnel across the Bering Strait. The primary function of this span would be to generate electrical power and house facilities for collecting and processing marine products. Beneath and above the ocean surface would be tunnels to transport passengers and materials. Pipelines to conduct fresh water from melting icebergs to other parts of the world may also be incorporated. Not only could this structure provide a physical link between Asia and North America, it could also serve as an avenue for social and cultural exchange.



Geothermal Energy Plants



Geothermal energy, with refinements in conversion technologies, can take a more prominent role in reducing the threat of global warming. Readily available in many regions throughout the world, this source alone would provide enough clean energy for the next thousand years.

Chapter Seven

Cities that Think

Designing the Future

Local governments spend lots of time and resources attempting to update our current cities, roads, and transportation systems. The cost of operation and maintenance and overall inefficiency is high. It is less expensive to build newer cities from the ground up than to restore and maintain old ones, just as it is more efficient and less costly to design flexible, state of the art production methods than it is to attempt to upgrade obsolete factories.

To have a world without pollution and waste, yet keep parks, playgrounds, art and music centers, schools, and health care available to everyone without a price tag, requires profound changes in the way we plan our cities as well as our lifestyles.

To phase in this new system, the first city will test the validity of design parameters and make necessary changes as needed. This new social direction could be promoted on many fronts with books, magazines, TV, radio, seminars, theater, and theme parks, We could also design and experiment with automated building processes for the next city.

Innovative multi-dimensional circular cities combine the most sophisticated resources and construction techniques available. The geometrically elegant circular arrangement, surrounded by parks and gardens, is designed to operate with minimum energy to obtain the highest possible standard of living for everyone. This city design uses the best of clean technology in harmony with local ecology.

The design and development of these new cities emphasizes the restoration and protection of the environment. It must be understood that technology without human concern is meaningless.

The new cities would provide a total environment with clean air and water, health care, good nutrition, entertainment, access to information, and education for all. There would be art and music centers, fully equipped machine shops, science labs, hobby and sports areas, and

manufacturing districts. These new cities would also provide all manner of recreation within a short distance of the residential district. Waste recycling, renewable and clean power generating systems, and all services would be managed with integrated, cybernated methods. The management of one's personal life, his/her life style and personal preferences, is left entirely to the individual.

Some cities can be circular while others may be linear, underground, or constructed as floating cities in the sea (we will get to them later on). Many cities would be designed as total enclosure systems, much like a cruise ship outfitted for a six-month cruise. They would contain residences, theaters, parks, recreation, entertainment centers, health care and educational facilities, and all the requirements and amenities for a total living environment. Everything in these cities would be as near to a self-contained system as conditions allow. In northern locations, some could be partially underground.

In planning the cities, computers will help determine the design based on the most comprehensive analysis of data about the environment and human needs. For example, the characteristics of the population in a given area determine how many hospitals and schools are built and the equipment needed. Some medical systems would be mobile and others prefabricated on land and sea. Eventually entire cities would be automatically assembled on site from standardized, prefabricated sections made in automated plants. Through this "systems approach" method -- we can't emphasize this too much -- we will be able to give all people a very high standard of living in the shortest possible time.

This permits a wide range of flexibility in design for changes and takes advantage of interchangeable units. Cities take on new and different appearances depending on how they are used. Each city is unique. It does not reduce the lives of people to a subsistence level; rather, it makes available all the amenities that modern science and technology can provide. Even the wealthiest people of the past could not achieve a standard of living equal to that in these new cities, which will also maximize safety and peace of mind.

The structures will be made of newer materials such as a sandwich-type assembly that is semi-flexible with an inner foam core and a glazed ceramic outer surface to allow for expansion and contraction without fracture. This requires no maintenance. The thin shell construction can be mass-produced in a matter of hours. This type of construction suffers little or no damage from earthquakes, hurricanes, termites, and fires. Windows will be controlled electronically to shade or darken external illumination

and come equipped with computer-controlled, automatic cleaning systems that require no human labor.

Innovative technologies make it possible to conserve resources for lesser-developed regions, without sacrificing any of the conveniences of advanced living. It is only through such innovations that our end goal of a high standard of living for the entire human race can be achieved.

These cities coordinate production and distribution, operating a balanced-load economy so there is no over or under production. Accomplishing this requires an autonomic nervous system (environmental sensors) integrated into all areas of the social complex.

For example, in the agricultural belt electronic probes embedded in the soil automatically maintain a constant inventory of the water table, soil conditions, nutrients, etc., and act appropriately without the need for human intervention as conditions change. This method of industrial electronic feedback would be applied to the entire system.

The cities would function as evolving, integrated organisms rather than as static structures because their design accommodates to change. These total environments will permit the widest possible range of individuality and creativity for those living in them.

Design Consideration

At one time, architectural adornments were an integral part of construction. The lofty columns and colonnaded porticos of ancient Greece and Rome were necessary components of their structures. With the advent of newer, lightweight materials and engineering improvements, we can now span greater distances without columns or other intervening support structures.

The resource-based economy would no longer engage in the conscious withdrawal of efficiency to maintain designs felt to be impressive. If we continue to design our buildings with conspicuous waste and decoration, we lessen the standard of living for others by using resources wastefully. Designing a building with many artificial projections does not indicate originality, creativity, or individuality. Individuality is expressed by our unique way of thinking about ourselves and the world around us, not by our external appearance.

This is not to detract from beautiful structures created in the past with the available and limited technology available at the time. However, the

continuing application of ancient methods of construction retards innovative and creative thinking, which is necessary to an emergent culture.

The intelligent use of resources incorporated into structures considerably simplifies our lifestyle and reduces waste and maintenance. These new cities would provide for the needs of the inhabitants through an efficient allocation of resources and materials, in an energy-conscious and pollution-free environment.

Homes

To many in the early twenty-first century, the homes of the future may appear surreal. For example, homes can be sheltered from the weather by electronic means. The furnishings may consist of totally different configurations that automatically adjust to our body contours. New technologies will make walls entirely transparent so occupants can view the surrounding landscape without anyone on the outside seeing in. Daylight can be softened and subdued according to the preference of the occupants. These buildings would provide a barrier to sound, insects, and dust, and maintain the desired internal temperature. Telephones would be entirely invisible and a component part of the interior structure, focusing sound to your ear by electronic means. The building's materials will generate energy and control their own surrounding climate.

With the intelligent application of humane technologies, a wide array of uniquely individual homes can be provided. Structural elements would be flexible and coherently arranged to best serve each individual. Pre-fabricated modular homes will embody a high degree of flexibility inconceivable in the past. They can be built in any place one might want, amidst forests, atop mountains, or on remote islands. They can be designed as self-contained residences with thermal generators, heat concentrators, and photovoltaic arrays built into the skin of the building. Thermo panes would tint out bright sunlight using variable patterns of shading. All these features are controlled by the occupant and supply more than enough energy to operate the entire household.

Homes will also contain a precise combination of dissimilar metals utilizing the thermocouple effect for heating and cooling. Other materials embedded in solid-state plastic or ceramic materials would make up the structure of the home. With this application, the warmer it gets on the outside, the cooler it becomes on the inside. This method serves to heat or cool the buildings. The interiors of the homes would be designed to suit the preferences of the individuals.

Transportation

When travel outside the city is desired, computer-guided vehicles for land, sea, air, space and beyond can transport passengers and freight. For rapid movement of passengers on land across viaducts, bridges, and tunnels, high-speed mag-lev trains span great distances and will efficiently replace most aircraft transportation. Some passenger compartments in the transport units can be transferred from the moving train during transit, which eliminates waiting time at stations. Rail, sea, and undersea craft can handle most freight. Many of the transport units have detachable components and contain standardized containers making them easy to transfer.

In the cities various types of escalators, elevators, conveyors, and transveyors can be designed to move in all directions throughout, even up the sides of buildings. They can be interconnected with other transport systems and extend into homes as well.

Most of the smaller transportation units for people can be operated by voice control. When voice control is not practical or possible, alternative methods such as keypads can be used. Without large corporations controlling automobile manufacture for profit, all transportation systems can be designed as modular, continuously updated, and provided with the latest developments in technology.

Circular City



The outer perimeter is part of the recreational area with golf courses, hiking and biking trails, and opportunities for water sports. A waterway surrounds the agricultural belt with its enclosed, transparent buildings. The application of newer technologies eliminates, once and for all, the use of dangerous chemicals and pesticides. Continuing into the city center, eight green sectors provide clean,

renewable sources of energy using wind, thermal, and solar energy devices. The residential belt features beautiful landscaping, lakes, and winding streams. The homes and apartments are gracefully contoured to blend in with the landscape. A wide range of innovative architecture provides many choices for the occupants.

Adjacent to the residential district a wide selection of healthy, organically-grown foods are available on a 24-hour basis. Next are the apartments and design centers, which surround the central dome. Eight domes house the science, art, music, research, exhibition, entertainment, and conference centers, which are all fully equipped and available to everyone.



The central dome, or "theme center," houses the cybernated system, educational facilities, health center, and facilities for shopping, communications, networking, and childcare. In addition, it serves as the core for most transportation services, which take the form of horizontal, vertical, radial, and circular conveyors that safely move passengers anywhere within the city. This system facilitates efficient transportation for city residents, eliminating the need for automobiles. City-to-city transportation is provided by monorail and electrically operated vehicles.



Total Enclosure Cities

Many cities are designed as total enclosure systems, much like a cruise ship outfitted for a six-month cruise. They contain residences, theaters, parks, recreation, entertainment centers, health care, and educational facilities, and all the requirements and amenities for a total living environment. Everything in these cities is as near to a self-contained system as conditions allow. In northern locations or uninhabitable areas, cities can be subterranean.



Cybernated Complex

This cybernated complex utilizes advanced imaging technology to project a 3-D "virtual" image of the earth in real time. It utilizes satellite communication systems to provide information on worldwide weather conditions, ocean currents, resource inventories, population, agricultural conditions, and fish

and animal migration patterns. The interconnected cybernated complexes represent the brain and nervous system of the entire world civilization. All information is available on demand to anyone via the Internet. This single site manages our common heritage of resources, and monitors the carrying capacity and health of Earth.



University City

This University of Architecture and Environmental Studies, or "World University," is a testing ground for each phase of architectural development. This is a "living" and continually evolving research institute open to all. Student performance is based on "competence

accreditation" and research findings are applied directly to the social structure to benefit all of humanity.

People live in these experimental cities and provide feedback on the livability and serviceability of the various structures. This information is used to formulate modifications to structures so that maximum efficiency, comfort, and safety are assured. This facility is also used to develop modular construction systems and components that serve a wide range of needs and preferences. In most instances, the external appearance of the buildings reflects the function of the building – they are designed "from the inside out."

Skyscrapers

These skyscrapers are constructed of carbon fiber-reinforced and pre-stressed concrete. They are stabilized against earthquakes and high winds by three massive, elongated, tapered columns, which are 100 feet wide at the base. This tripod-like structure is reinforced to diminish compression, tension, and torsion stresses.



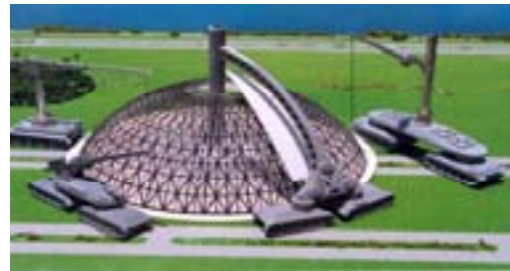
These super-sized skyscrapers assure that more land is available for parks and wilderness preserves, while concurrently helping to eliminate urban sprawl. Each of these towers encloses a complete environment, containing access centers as well as childcare, educational, health, and recreational facilities. This helps reduce the need to travel to outside facilities.





Center For Dialogue

The mission of The Center for Dialogue is to submit the urgent issues of the times to critical examination, and to raise relevant questions for informed public dialogue.



This photo on the right represents the automated building of a dome's structure.

International Shipping Systems



Hydrodynamic seafaring vessels permit high-speed efficient travel. They are energy efficient and provide maximum comfort and safety for passengers. They are manufactured from durable composite materials, their outermost skin consisting of a thin layer of titanium, which requires minimal maintenance. Portions of the upper deck slide open when the weather permits.

Ships With Detachable Components



Many of the transport units have detachable components and contain standardized containers making them easy to transfer. Entire freight sections are unloaded instead of separate containers.



Ships & Canals

An efficient national transportation system would include a network of waterways, canals, and irrigation systems. Many of the ships traversing these canals are floating automated plants while others transport passengers and freight. An innovative approach to education could be offered in floating "education centers" where children and adults travel

from one area of the continent to the other. This would allow them to learn about the world in which they live, not merely through books, but through experiencing and interacting with the "real-world" environment.

"Mega hydrological projects" would be an integrated part of intercontinental planning, minimizing floods and droughts while aiding the migration of fish, removal of accumulated silt, and developing sites to manage and "clean" agricultural and urban run-off. Floodwaters would be diverted to water storage basins, allowing the water to be used during periods of drought. This not only helps maintain the water table, but also provides natural firebreaks and an emergency water source for fires. In addition, these canals would supply water for farming and irrigation, supply the nation's land-based fish farms, protect the wetlands and wildlife, and supply water to recreation areas.



Automobiles

Streamlined cars would provide high-speed, energy efficient, and safe long-range transportation. Some vehicles may have wheels, while others are equipped with magnetic levitation or air-floatation devices. Vehicles would be

equipped with voice-recognition technology that allows passengers to request their destination by voice command. Self-monitoring systems will tell the vehicles when service is required, and they would transport themselves to service and maintenance facilities. Use of clean, non-polluting electrical energy would allow for silent vehicle operation. Proximity-sensor devices linked to automated velocity and braking systems can enable the vehicles to avoid collisions. As a secondary safety measure, the entire interior will contain a protective membrane. Within the cities, horizontal, vertical, radial, and circular transveyors would serve most transportation needs.

Mag-Lev Trains - Mass Transportation Systems and Monorails



While these high-speed, magnetic levitation trains are in motion, a segment of the passenger compartment is either lifted or slid to the side.



These detachable sections can then take passengers to their local destinations while other compartments are lowered in their place. This method allows the main body of the train to remain in motion saving time and enhancing efficiency. In addition, the

removable compartments are specially equipped to provide a wide range of transportation services. These high-speed mag-lev trains and monorails will be used for city to city transportation.

Bridges



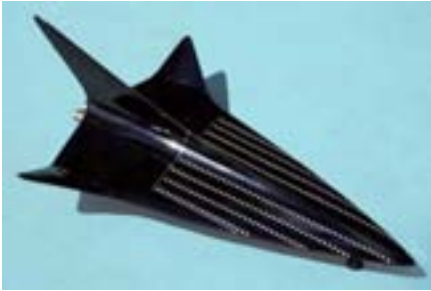
These elegant bridges are designed to carry compression, tension, and torsion loads in the simplified expression of its structural members. In some instances Mag-lev trains are suspended beneath the enclosed traffic lanes.



Future Aircraft

Since military aircraft would be unnecessary in a resource-based economy, emphasis is shifted to advancing medical, emergency service, and transportation vehicles. Here is an example of VTOL (Vertical Take-off and Landing) aircraft with three synchronous turbines, which allow exceptional maneuverability.





These delta-configuration aircraft are controlled by electrodynamic means, eliminating the need for ailerons, elevators, rudders, spoilers, flaps, or any other mechanical controls. In addition to providing better maneuverability and aerodynamic qualities, this innovative technology also serves as an anti-icing

system. In the event of an emergency landing, fuel is ejected to prevent fires.



VTOL



Chopper



Chopper & Delta Wings

These Vertical Takeoff and Landing (VTOL) aircraft lift passengers and freight by the use of ring-vortex air columns. The helicopter in the foreground has a stationary center around which the rotors are propelled by engines at their tips. VTOL aircraft are propelled by a variety of techniques, from ducted fans to vectored jets. They are designed to combine the most desirable attributes of fixed winged aircraft, helicopters, and flying platforms. Transcontinental travel is achieved through advanced aircraft and high-speed mag-lev trains, all integrated into a worldwide transportation system.

Airports



The central dome of this airport contains terminals, maintenance facilities, service centers, and hotels. The runways are arranged in a radial configuration, which allows airplanes to easily take off into the prevailing winds and to avoid dangerous crosswind landings. Emergency stations at the edge of the runways are fully equipped with built-in fire fighting equipment and emergency

arresting gear. All runways are equipped with built-in sprinkler systems. Passengers are transported to and from the airport by underground conveyors. Many of the terminals themselves are constructed underground for increased safety and more efficient use of the land.



Homes

The architecture and individual dwellings of the cities evolve in an entirely different manner from past houses. With the intelligent application of humane technologies, a wide array of unique individual homes can be provided. Their structural elements are flexible and coherently arranged to best suit individual preference. These pre-fabricated modular homes, embodying a high degree of flexibility, can be built in any place one might imagine, amid forests, atop mountains, or on remote islands.



All these dwellings are self-contained energy efficient residences with their own thermal generators and heat concentrators. Photovoltaic arrays are built into the skin of the building and into the windows. "Thermopanels," tint out bright sunlight with variable patterns of shading. All these features are selected by the occupant to supply more than enough energy to operate the entire household.



Homes are prefabricated from a new type of pre-stressed reinforced concrete with a flexible ceramic external coating; they are relatively maintenance-free, fireproof, and impervious to weather. Their thin shell construction is mass-produced in a matter of hours. With this type of construction, there is minimal damage from earthquakes and hurricanes.



Automation

Machine Intelligence

The key to achieving abundance and a high standard of living for every person on the planet is to automate as much as possible in the shortest period of time. By replacing human labor with machines and implementing a global resource-based economy, everyone lives better than the wealthiest of today. A future without locks on the doors, and no fear of someone hitting you over the head to steal your goods or money is possible -- because everyone has free access to all that is available. And there can be much available by automating and using resources wisely.

Cybernation, the merging of computers with production, will unleash an outflow of goods and services never before experienced. There is much work to be done on artificial intelligence (AI). AI is computer programming that simulates human decision-making and hypothesis testing along with self-correction. AI redesigns mechanical and electronic systems to simulate and improve upon human performance. As exciting as these developments are, we are just at the beginning of the possibilities.

Cybernation can be regarded as the only *real* emancipation proclamation for humankind when used humanely and intelligently. It enables people to have the highest conceivable standard of living with practically no labor. It frees people for the first time from the routine of repetitive day-by-day activity. When humans are free of the outmoded methods of a monetary system, we will finally begin to understand what it means to be civilized.

When we use automation and cybernation more extensively, not only industrial workers, but also most professionals can be replaced by machines. Even today, the most visionary writers and futurists have difficulty accepting the possibility of robots replacing surgeons, engineers, top management, airline pilots, and other professionals. Machines can easily replace humans in government and in the management of world affairs. This does not represent a take-over by machines, as some people might fear. Instead, the gradual transfer of decision-making to machine intelligence is the next phase of social evolution.

Computerized systems are more effective because of the number of sensors they have. Automated control can happen when sensors are installed in every conceivable location and linked through a worldwide network of computers.

During the transition from a monetary society to a resource-based society, teams of systems engineers, computer programmers, systems analysts, researchers, and the like will be needed to help supervise, manage, and analyze the flow of goods and services. But as the resource-based society moves toward a more cybernated world, most people are no longer needed to manage and operate this emerging civilization. Computers will eventually be able to design their own programs, improve and repair their own circuitry, and update information about social needs. Interlinked cyber-centers would coordinate the service industries, transportation systems, public health care, and education with the latest data for the world economy. Redundant systems would be in place in the event of failures or interruptions.

AI organized in this way within a resource-based economy results in more significant changes for the human race than any previous breakthrough, philosophy, or revolution. It is most significant when we understand that what is blatantly missing in today's society is the intelligent management of Earth's resources, and that most problems can be solved when technology is used wisely.

Consequently, a much higher standard of living for everyone all over the world can be achieved when the entire Earth's resources are connected, organized, monitored, and used efficiently for *everyone's* benefit as a total global system -- not just for a relatively small number of people.

Mega-machines

Mega-machines represent radical changes in the physical appearance, performance, and behavior of machines. They act more like living systems since they are capable of making appropriate decisions for their particular uses. In the event of unforeseen threats or dangers to humans, they will act on our behalf. To minimize system failure, computers are designed to be flexible and are capable of automatic shutdown in the event of failure of one of their parts.

In an advanced cybernated global economy, mega-machines, directed by sophisticated AI, excavate canals, dig tunnels, and construct bridges,

viaducts, and dams without the need for human involvement. Human participation consists of selecting the desired ends.

Massive self-erecting structures are most efficient in the construction of the entire global infrastructure. These are not cookie-cutter cities, as some would imagine. The notion that large-scale overall planning implies mass uniformity is incorrect.

Factories can be designed by robots for robots; cybernated systems are self-programming by means of environmental feedback. Machines of the future are capable of self-replication and improvement, and can repair themselves and update their own circuitry. Since the computers and systems involved are self-monitoring, parts are supplied and installed well in advance of any wear. The machines operate continuously except when conducting their own maintenance and repair.

To conserve energy, which is a major theme in the resource-based society, many manufacturing plants can be eliminated by having products produced automatically while being delivered. For example, transportation modules for ships, trains, and planes can process time-sensitive products like fish and vegetables while en route.

Utilizing technology in this way makes it possible for a global society to advance and change in the shortest time possible. You should remember that this is all made possible because the main objective is for everyone's gain, not just the benefit of certain corporations or individuals.

Robots Constructing Robots -Multi Access Industrial Robots



These “multi access industrial robots” utilize vast information resources, which enable them to receive commands via satellite up-link or on-site. They are also designed to take appropriate actions in the absence of human directives by combining an array of Micro Electro Mechanical Systems (MEMS), sensors, and

receivers with sophisticated decision-making circuits and artificial intelligence programs. They are capable of handling a wide range of industrial production tasks, and are even able to upgrade their level of service and replace their own parts. When necessary, these mega robots communicate with one another and coordinate the logistics and delivery of the required materials for each project.

Nanotechnology

Nanotechnology offers enormous potential. Nanotechnology combines optics and lasers, and enables matter to be assembled atom by atom, into whatever molecular structure is needed. Nanotechnology will lead to a sub-microscopic revolution in all fields.





Mega-Excavation Machines

This scene depicts a laser excavator. Such devices, directed via satellite, are capable of fusing the earth beneath it into a molten, magma-like material, thus contouring the earth to aid in the construction of canals, roads, and waterways.

Automated Tunnel Assembling Machine

Tunnel segments float down canals by the use of large flotation devices. This automated tunnel-assembling machine lifts prefabricated segments and places them in the required positions. Once completed the tunnels are used for high-speed mag-lev transportation.



The Construction of Towers

These towers are designed specifically for regions where earthquakes are prevalent. Such cable-suspended structures easily withstand a wide range of movement, stresses, and strains. Circular towers radially arranged are self-erected efficiently and rapidly around a central core that houses elevators and all other household utilities. The translucent windows serve as photovoltaic generators, and the intensity of the light entering the windows is varied electronically. All window cleaning and maintenance is automated.



Massive Lifting Crane



This multi-function crane is designed to lift freeform structures and position them on foundations and stilts or transfer them to vertical lift systems that place the units on towers. Upon completion of their task, these self-erecting cranes are disassembled into a compact form for easy transportation to the next assignment.

Mass-Produced Extruded Dwellings

This demonstrates how lightweight carbon fiber-reinforced concrete apartment dwellings are produced as continuous extrusions and then separated. The outer shells of these efficient structures serve as photovoltaic generators.



Lift and Positioning Crane

This automated machine places these prefabricated dwellings at on-site locations.

Mega Machines

The machine in the foreground is a multi-function unit. As shown, it lifts and inserts prefabricated housing components into a support structure. Although these "prefab" units are composed of standard components,



they are a modular design of such diversity as to allow maximum individual expression in interior design and décor.



Automated Construction Systems

Construction of these industrial and research complexes is carried out by robotic equipment that receives instructions via satellite. The construction crews consist of automated cranes that travel along the buildings' length installing

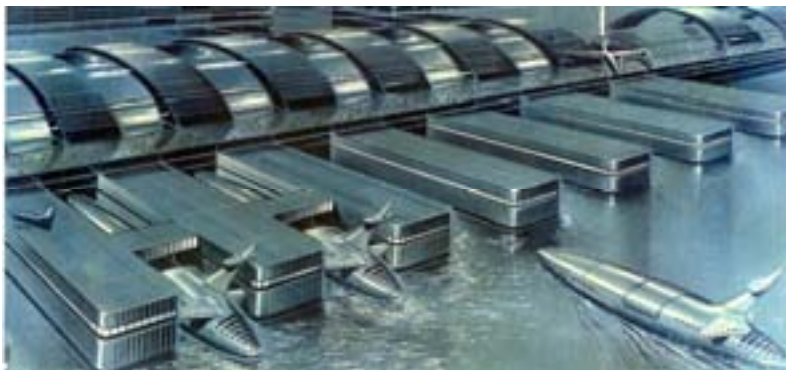
floors, windows, curtain-walls, roofing, and other components from the ground up, entirely free from human intervention. These devices contain self-monitoring sensors to minimize industrial accidents or collisions with other devices or living beings.



Desalinization Plant



This mega-machine is transporting a transparent enclosure used for evaporative condensation. It is placed over canals, some of them containing salt water, and serves as an evaporative desalinization plant to supply clean water for drinking, irrigation, and other needs. This is accomplished by harnessing the power of the sun and helps eliminate water shortages throughout the world.



International Shipping Systems

These ships are floating automated plants, capable of processing raw materials into finished products while en route to their

destinations. Some serve as industrial fish processing plants and canneries, while others are equipped with multi-cellular compartments capable of transporting a wide variety of products.

Chapter Eight

Fear of Machines

Machine Liberation

Many people fear a "takeover" by machines, but there has never been a single act or plan by machines to hurt anyone. (Unfortunately, the same cannot be said of human beings.) Humans, not machines, use nerve gas and missiles to destroy. Even automobile and aircraft accidents are mostly caused by human error rather than by mechanical failures.

Many people fear rapid technological developments, especially automated and cybernated machines, replacing human beings. To be fair, some of these fears are justified in a monetary system where rapid increases in production technology require fewer workers.

Some distrust a computerized society and fear possible failures of the machines. They worry that technology will make us more like machines, driving us toward uniformity, and resulting in the loss of individuality, freedom of choice, and privacy.

In defense of machines, there is no evidence of machines acting against human beings on their own, except in science fiction stories. Humans program machines and direct their use. It is not machines that are to be feared; it is the misuse and misdirection of these machines that threaten humankind. We must not forget that the bombing of cities, the use of nerve gas, prisons, death camps, and torture chambers have all been managed and operated by human beings, not machines. Even atomic weapons and guided missiles were built and directed by people. People pollute the environment -- our air, oceans, and rivers. The use and sale of harmful drugs, the distortion of truth, bigotry, and racial hatred are all part of flawed human systems and false indoctrination, and hardly characteristic of machines.

Machines are not the danger. We are. As long as we do not take responsibility for our relationship to fellow human beings and the intelligent management of our planetary resources, we are the greatest danger to the planet. If there ever were a conflict between people and machines, we know who would start it!

Science and technology create none of our problems. Our problems arise from human abuse and misuse of other people, the environment, and technology. In a more humane civilization, machines are used to shorten the workday, increase the availability of goods and services, and lengthen vacation time. New technology is used to raise the standard of living for everyone, and in this way, increasing the use of machine technology serves to benefit all people.

Chapter Nine

Cities in the Sea

The Ocean Frontiers

The web of life on our planet is supported by the hydro-cycle, that great variation of forms of water, which are part of the planetary circulation: the oceans, snow, ice, rain, lakes, groundwater, and aquifers. This constantly renewed circulation, powered by the heat of the sun, the rotation of the earth, and Coriolis forces, supports the entire life cycle, including humankind.

People often speak of underdeveloped land areas, but rarely of the greatest undeveloped natural resources on the planet, which are the world's oceans. Exploration and development of the oceans must be carried out with the utmost care. Although humans have used the oceans of the world for thousands of years as a source of food and transportation, we are just beginning to recognize the enormous potential and diversity of this relatively untapped resource. The oceans offer an almost limitless environment for food, energy production, transportation, minerals, pharmaceuticals, and much more.

In the past there was little regard for ocean life, which is essential to all life on Earth. We would survive and advance more easily as a species if we take seriously the reclamation of our oceans.

Past Abuses of the Ocean Environment

In August of 1970, the U. S. Army deliberately dumped containers holding 67 tons of nerve gas into the Atlantic Ocean. Worse, the dumping ground was close to a main artery in this life support system, the Gulf Stream, which makes the clean-up all the more urgent. The Navies of the world, the fishing fleets, cruise lines, and many coastal cities casually use the ocean as both trashcan and toilet.

The lack of adequate sanitation is one of the biggest threats to human health. It results in ill-health, disease, and death related to pollution of coastal waters. South Asia alone has 825 million people who live on the

coast without basic sanitation facilities. It isn't hard to understand why the levels of untreated sewage in South Asia's Coastal waters are the highest in the world. This, besides being a health risk to people, creates toxic algal blooms that cause mass kills of fish, wildlife and coral reefs. (4) Page 28 Transforming the Global Biosphere: Twelve Futuristic Strategies by Elliott Maynard, Ph.D.

Destructive environmental practices are numerous. Large commercial trawlers damage the sea-floor environment on a massive global scale. Their nets crush or bury seabed organisms, destroying their food and nursery grounds. This ecosystem is crucial for replenishing marine seafood stocks. (5) Ibid, page 70.

This process does more damage to the sea bed than clear cutting of the forests does to the Earth's surface. A single pass kills from 5 to 20 percent of seafloor animals, and this goes on twenty four hours-a-day seven days-a-week, year round on a global scale. (6) Ibid, Page 70-71.

Mismanagement of run-off has created huge lifeless areas in the Gulf of Mexico where the Mississippi River drains. Destructive business practices have over fished the waters to the point where most of the larger more productive reproducing fish are close to extinction. Throughout the world, major marine species and the coral reefs that nurture them are rapidly disappearing, but not naturally, or because their death in any way prolongs our way of life. On the contrary, these extinctions endanger us and derive from our own arrogance and ignorance. Even to the most complex living ecology, we act as predators.

New Respect of the Web of Life

With the resource based economy comes new value systems. Since no one gains financially through the wasteful practices of the past, the main objective is to reclaim and maintain a healthy and productive environment. If the oceans are intelligently managed, they can easily supply more than enough resources to feed the world's hungry. Billions could depend on the sea, where life is abundant and varied, for their primary source of protein. Although the overwhelming majority of sea life dwells near the surface, in the chill murky depths miles below where even sunlight never ventures, life abounds despite fantastic pressures and temperatures. In near-freezing temperatures, boiling vents of toxic gasses support a wide variety of sea life that remains to be studied.

Great rivers, called currents, cross the oceans of the planet, set in motion by Earth's rotation. These immense oceanic currents travel at varying

speeds, at different depths, and even in opposite directions. It is estimated that the Gulf Stream carries about 30 million cubic meters of water per second past Miami, Florida. This is more than five times the combined flow of all the fresh water rivers of the world.

By harnessing this potential energy, it is estimated that close to a thousand million watts on a 24-hour basis -- or as much as two large nuclear plants -- could be generated, without environmental contamination or radiation danger.

In addition, powerful winds, waves, and currents provide us with enormous potential sources of electric power. Energy "crops" can be farmed from biomass by converting waste organic materials into gaseous or liquid fuels. Additional energy can be obtained from fermentation. Imagine a pile of decaying food and other organic matter. This pile of biomass gives off heat and gasses. This potential source of energy can be harnessed and used with proper technology.

On the sea floors and in the brine-filled waters themselves are vast storehouses of metals and minerals that can be used to help resolve resource shortages. However, "harvesting" the metals and minerals will require new technologies that do not disturb the fragile sea floor.

These are but a few of the massive ocean projects that can be explored. Perhaps more exciting are designs for Cities in the Sea.

Cities in the Sea

Colonization of the oceans is one of the last frontiers remaining on Earth. Prodigious oceanic city communities are inevitable and will be among the greatest achievements of a new society.

To fully utilize this bountiful wellspring of resources, we must develop large marine structures to explore the relatively untapped riches of the world's oceans. They will provide improved mariculture, fresh water production, power, and mining, which will offset land-based mining shortages. The oceans can provide almost unlimited riches in pharmaceuticals, chemicals, fertilizers, minerals, oil, natural gas, sweet water, and tidal and wind power, to name a few. Ocean-based and space-borne sensors would constantly track tidal flow, marine life, water composition and temperature, atmospheric conditions, and myriad other vital signs.

The development of these ocean communities would greatly relieve land-based population pressures. The population of such cities could vary from

several hundred to many thousand and they could be located throughout the world. They would be controlled, managed, and operated primarily by automated systems, and would be part of the international communications network. The oceans are, after all, essential to our survival and are a critical part of Earth's carrying capacity.

Use

Some of these cities could serve as universities and research centers where students from all nations could study marine sciences and management. They could also serve as monitoring stations of ocean currents, weather patterns, marine ecology, pollution, and geologic phenomena. For additional marine exploration, robotic submersibles would be designed and made available to everyone.

Other sea platforms could be used as rocket-launching systems. Space vehicles launched at the equator would save energy because the equator is the fastest moving portion of the earth. Locating launch sites there would take full advantage of Earth's rotation for additional thrust, requiring fewer thruster burns to reach geocentric orbit (the orbit where a satellite rotates with Earth and remains in a stationary position relative to it). For polar orbits, the launch platforms would be located off the west coast of the U. S. with computerized control and command systems located on ships or on the platforms themselves.

Not all areas of the oceans need to be used for technological development. Vast areas can be set aside for reclamation, enhancement, and preservation, making them a priority for global conservation.

For instance, the Caribbean and the Emerald Shoals of the vast banks of Eleuthera feature some of the clearest waters in the Bahamas and one of the most beautiful coral atolls in the Western Hemisphere. The waters surrounding these islands vary in hue from the magnificent deep blue of the Gulf Stream to shimmering shades of green. Similar areas exist in the South Pacific and many other locations throughout the world, where thousands of miles of shoreline remain unmarred by human habitation. In a new spirit of world cooperation, many of these areas can be set aside as international marine parks for the education and enjoyment of all. In these areas the only human intervention is to preserve and protect aquatic sanctuaries.

Life Styles on the Sea Cities

Future cities of the sea offer new and fascinating lifestyles for millions of inhabitants and are a favorite destination for all. Some would serve as underwater international parks where visitors observe the great protected reefs of the world. Through huge undersea windows they would be able to view the wonders of this environment in leisure and comfort; from a computerized chair, they could communicate with dolphins and other forms of marine life. Diving expeditions can be made through airlocks, and people are able to participate in research, sailing, scuba diving, and all the amenities that sea cities offer along with many other surface and sub-surface water activities -- without disturbing the balance of the marine environment.

Construction

Massive ocean structures would exist both above and beneath the sea. These structures would represent a spectacular engineering achievement with aircraft, sea craft, and submersible access. One of the most efficient designs would be a circular configuration, multi-storied, and fabricated of steel, using glass of superior strength and pre-stressed concrete reinforced with carbon fibers.

Some would be floating while others would be built on pilings with flotation barriers to prevent wind and heavy seas from damaging the structures. In deeper waters the floating platforms could be anchored to the seabed. Other ocean platforms could float freely, being self-propelled and extremely stable, ballasted by columns about 20 feet in diameter that penetrate 150 feet below the surface. To keep the platforms steady in any type of weather, the lower portions of these floating, cylindrical columns would contain a series of disks that extend out about six feet, spaced approximately ten feet apart. A belt surrounding the entire project would act as a breakwater.

Some of these cities can be constructed in technically developed countries and towed to their destination in sections, or as complete operating systems, similar to the manner in which oil platforms are transported to their destinations now. Other configurations would be variable composite structures, assembled on site and modified to serve many different functions, with the ability to be disassembled and relocated if required.

Other above-surface structures anchored to the seabed would serve as efficient bases for mining operations. These dome-shaped structures could

be almost totally automated, their flotation levels adjusted by flooding or emptying buoyancy chambers. They would be constructed in dry dock, towed to their destination, and then submerged and anchored into place. A floating dock system, which rises and falls with the tides and accommodates both surface and submersible craft, could be part of this design.

All marine development must be in full accord with the total carrying capacity and sustainability of the ocean environment. In the future, before any of these projects are built, the designers will account for the possible negative impact on the entire hydrosphere – the rivers, estuaries, lakes and oceans.

Energy

On these and other floating cities or platforms, powerful wind turbines can capture the ocean breezes. Solar and wind power generators are located on most of the upper decks. Cold water from the depths of the ocean can also be pumped up for uses such as the conversion of temperature differences into electrical energy. This process would provide a continuous supply of electricity far in excess of the cities' needs.

Mariculture

Mariculture, the planned cultivation of marine crops, and fish farming communities, can be designed to support more than one type of marine life. A mutually supporting symbiotic relationship can be sustained while emulating natural conditions as closely as possible. A wide variety of aquatic plants may be cultivated in multiple layers and suspended by cables in underwater fields adjacent to the cities. In some instances, the tops of plants could be harvested automatically, leaving the roots and lower third of the plant to grow new crops without replanting.

These floating ocean platforms would be equipped with solar-operated desalinization plants, which would extract fresh water for hydroponics farming and other uses. Upwelling can also be harnessed to extract deep-sea nutrients to supply aquaculture farming. Of course, any attempt at aquaculture or mariculture would be subject to international monitoring of ocean farms.

This provides fish farming complexes and introduces the most advanced principles of poly-culture, which maintains the reproduction and natural balance of species. Every precaution would be taken to avoid disrupting

or spoiling the spawning grounds that have sustained the human race for centuries.

Transportation

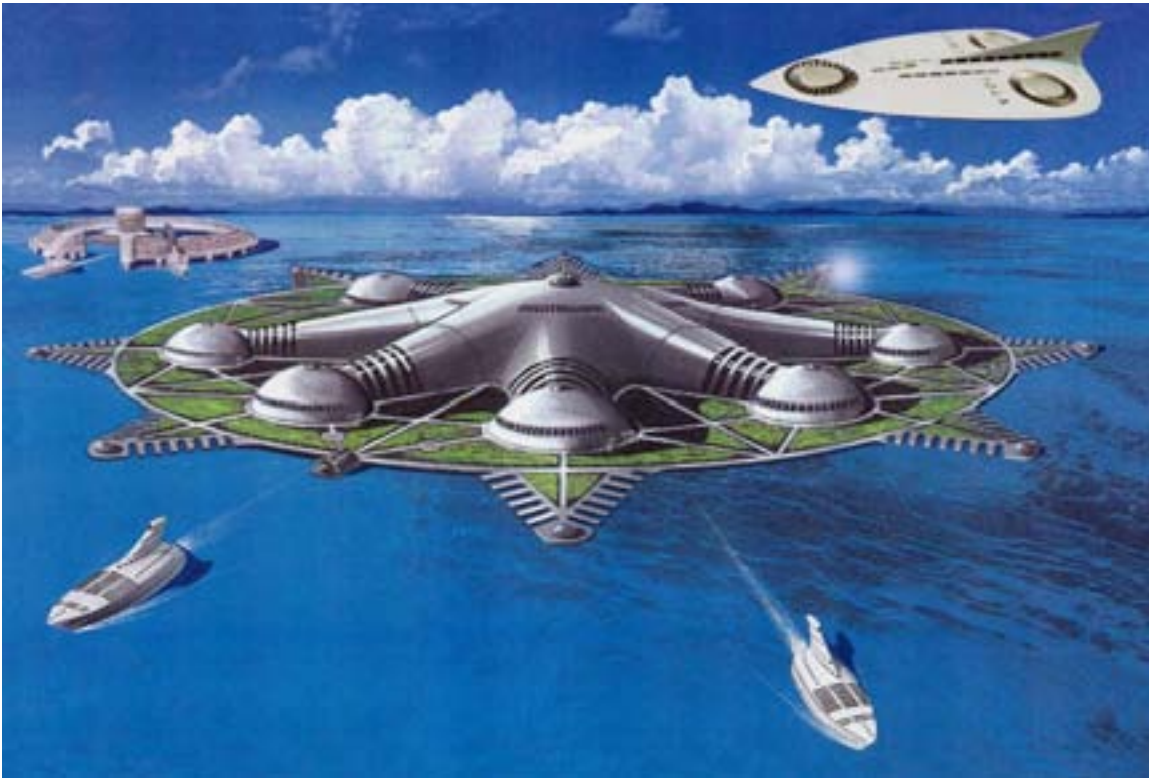
Immense floating structures can be equipped with loading and docking facilities for vessels. Huge ships that serve as processing plants could transport passengers and freight to these cities in the sea as well.

The upper deck of the sea cities would have a landing area for helicopters or VTOL aircraft. Computerized lift-units would facilitate vertical, horizontal, and radial travel within these structures.

Joint Venture

Where a project of this magnitude is concerned, like other resources, it is imperative that benefits be shared equally by the entire global community. The mineral wealth of the oceans and the other resources of our world must be shared by all nations as the common heritage of humankind.

Artificial Islands in the Sea



This artificial island in the sea is designed to serve the oceanographic sciences. Multiple docking and landing facilities for VTOL aircraft surround the entire island. Water-based recreation is part of life in these water-borne communities. People can participate in research, sailing, scuba diving, and many other surface and sub-surface activities without disturbing the balance of the marine environment.



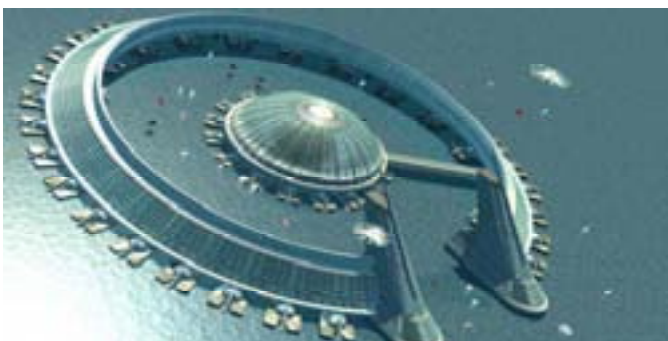
Cities in the Sea

From the tops of these structures, a cylindrical concrete conduit extends 150 feet above the ocean surface. At surface level, it is encircled by a floating dock system, which rises and falls with the tides and accommodates both surface and submersible craft.



Cities in the Sea

Thousands of self-sufficient cities in the sea, varying in design according to their location and function, alleviate land-based population pressures. Some serve as oceanographic universities to survey and maintain a dynamic balance in the oceanographic environment.



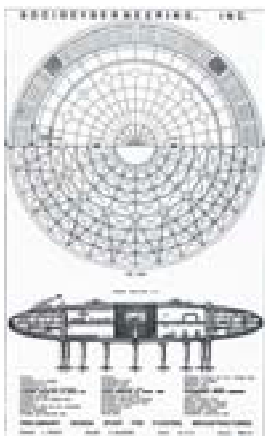




Ocean Mining Mega-Structures

These “cities in the sea” provide improved mariculture, fresh water production, power, and deep-ocean mining, which helps alleviate shortages of

land-based minerals. Such structures provide us with almost unlimited resources in pharmaceuticals, chemicals, fertilizers, minerals, metals, oil, natural gas, drinking water, and ocean farming, as well as tidal and wind power and more.



Construction of a Floating Mega-Structure

These illustrations depict a “floating mega-structure” that is being assembled in a dry dock entirely by robotized automated systems free of any human intervention. After construction, these structures are towed in sections or as completed units to locations where they are anchored to the seabed. In some instances, these cities can even travel and relocate.

City in the Sea With Modular Freighter



City in the Sea Modular Freighter



This modular freighter, leaving a city in the sea, consists of detachable sections that can be rapidly loaded or unloaded. The number of sections varies, depending on the amount of freight to be delivered. When all the modules are connected they are propelled as a single unit. When the freight arrives at its destination, the selected modules can be disconnected and towed to docks.

Apartments in the Sea Cities



Through huge undersea windows, occupants are able to view the wonders of this environment in leisure and comfort. From a computerized chair, they communicate with dolphins and other forms of marine life.

Floating Sea Domes



These unsinkable floating sea domes provide for those who prefer unique offshore or island living. In the event of severely inclement weather, they can easily be towed ashore, mounted, and locked to elevated support structures. They are equipped with retractable enclosures that cover the outer deck.

Solar Panels at Sea

On these and other floating cities or platforms, powerful wind turbines capture the ocean breezes. Solar and wind power generators are located on most of the upper decks and in the ocean as well.



Mariculture



Mariculture (the planned cultivation of marine crops) and fish farming communities are designed to support more than one type of marine life. Many of these communities maintain a balance of species in mutually supporting symbiotic relationships, while emulating natural conditions as closely as possible.



Chapter Ten

Decision Making and Laws

Decision Making

How are decisions arrived at in a cybernated resource-based society?

To answer this question, we use the scientific method and have computers get direct feedback from the environment. Computers would have electrical sensors extended into all areas of the social complex around the globe. For example, electrical sensors would extend into agricultural regions where computerized systems manage and control the agricultural requirements by monitoring the water table, insects, pests, plant diseases, soil nutrients, and so forth. Decisions are then arrived at using direct feedback from the environment. The result would be a more humane and meaningful civilization that is not based on the opinions or desires of a particular sect or individual.

One can think of this as a global autonomic nervous system. A human body reacts automatically to infection. If one has an infection in the toe there is no committee meeting of cells to inform the brain of the infection. The nervous system directs antibodies to the infected site automatically. This automatic response of the nervous system parallels the working of a resource-based economy.

The question we have to ask is "What end do we wish the culture to serve?" As the need for money is surpassed and the new mission is the well-being of all people and protection of the environment, the answers become readily available. The result is clean air and water, arable land, nutritious food, efficient transportation, a relevant education continuously updated, good health care, constructive social interaction, and cities functioning to serve these ends and more. This represents a more humane and meaningful approach for shaping civilization that is not based simply on opinion.

As we transition to a fully cybernated process of governing human affairs, newer technologies can be installed that remove human error. These machines would provide information rather than opinion, thus considerably reducing the influence of bias and irrational or purely

emotional elements in how affairs are managed. This way people play less and less of a role in decision-making and the society is working towards AI and machine decision-making to manage all resources, serving the common good.

Laws

Laws, at best, are attempts to control a population, and work only sporadically with great expense and hardship. Other common behavior-control methods are patriotism, religion, propaganda, and nationalism. All manmade laws are developed to preserve the established order. But laws never get to the root of problems, and they are continuously violated -- even by those who make them. When laws do not correspond to the nature of the physical environment, they will be violated. With so much economic deprivation and insecurity, even in the most affluent nations, no matter how many laws are enacted the same problems persist. In actuality, it is how the society is structured that is at fault.

Let's examine these concepts further.

The need for laws is a result of a *society being scarcity-oriented*. If a resource is abundant no one monitors it. When the necessities of life are abundant, monitoring is unnecessary.

In a resource-based economy social responsibility is not instilled by force, intimidation, or promises of heaven or threats of hell. Protection of the natural environment is not a matter of fines or penalties. Safeguards against abuse are designed into the environment. A simple example of this may be seen in the design of the cities where people have free access to resources without a price. This eliminates theft. Such measures are not a matter of passing and enforcing laws to prevent and punish abuse. Rather, they are a means for designing the flaws out of the social design, thus eliminating the need for many laws.

To eliminate traffic accidents a culture relying on the scientific method would not pass a law limiting speed to 55 mph. They would redesign the transportation systems so that accidents do not occur by using automated trains, monorails, transveyors (horizontal, vertical and radial transveyors), and individual units that have many sensors to diminish the possibilities of accidents.

A society with human concern "designs out" the need for laws and proclamations by making all things available to all people, regardless of race, color, or religious belief. When governments make laws, people are

led to believe that these laws are made to protect people's lives. In truth, laws are byproducts of insufficiency.

If we try to control human behavior by enacting laws or signing treaties without changing the physical conditions responsible for aberrant behavior, we are putting a Band-Aid on the issue. Instead of depending on a failed system of punishment or incarceration after the damage has been done, we should shift our attention to the inadequacies of society. These are things like poverty, malnutrition, homelessness, poor role models, a failed education, children lacking direction or interests, violence in the media, stresses in family life, and no positive vision for society to work toward.

A resource-based world economy brings about vast changes in human and interpersonal relations without the necessity of laws. It does this by introducing a set of values relevant to the needs of all people. It views all of the world's resources and technical information as the common heritage of all people. This is the unifying imperative. If accepted universally, the world will witness an end to the need for armaments, war, drugs, greed, and the other problems brought about by the endless pursuit of money and power.

Society has to understand that all of nature is subservient to natural law. Natural law cannot be violated without serious consequences to the individual or to society. Natural law dominates all living systems. For instance, without water, sun, or nutrients, plants and animals can not survive. Natural law is inviolable. A person who does not receive proper nutrition will not enjoy physical well-being and will soon become ill and die.

Similar Laws Apply to Human Behavior

Human behavior in all areas is just as subject to natural laws and the actions of external forces: it is generated by many interacting variables in one's own environment. This applies to behavior that is socially offensive. It is often influenced either by one's experiential background, nutritional factors in early life, or a number of other interrelated environmental factors.

When we see a dog leading a blind person across the street we tend to think it is a good dog. But when we see a dog bark at a cyclist we call it a bad dog. The dog is neither good nor bad. A dog can be trained to be ferocious or to help the blind. Both animals could be of the same breed, even from the same litter. Their different behavior is due to the differences in upbringing.

To put it another way, imagine an ancient Roman family watching Christians being fed to lions. Someone of today might be horrified and believe the people watching had trouble sleeping that evening. But they most likely had no trouble sleeping at all. Such bloodshed was the cultural sport of the times. Lions and Christians were looked upon with equal disdain.

Or imagine a modern day fighter pilot trained in warfare and taught a similar disregard for other cultures and beliefs losing sleep over shooting down twenty planes, and burning several inhabited villages. More likely, he will beam as he gets a medal and adorn his aircraft with symbols of his "kills." The pilot reflects his culture just as much as the Roman family does theirs. What we call our 'conscience' and 'morality' are not determined by an invisible "higher self." They are largely determined by geography, the times, and the individual's upbringing.

Whether they realize it or not, in the monetary system people are constantly manipulated through the media. People's most cherished beliefs are influenced by books, motion pictures, television, religions, role models, and the environment they live in. Even their notions of good and evil and their concepts of morality are part of their cultural heritage and experiences. This method of control does not require the use of physical force and is so successful we don't even recognize or feel the manipulation.

The dominant values of any social system rarely come from the people. Rather, they represent the views of the dominant control group such as the church, the military, the banks, the corporations, the power elite, or any combination thereof. These entities determine the public agenda, the courts, taxes, etc., all of which serve their own interests and perpetuate the illusion that society's values are determined from the ground up. In addition, governments suppress or explain away deviations that may threaten them.

With the scientific understanding that behavior is subject to the same natural laws that govern other processes, the educational system in the resource-based economy can evolve. It would teach process and analytical skills rather than rote memorization of facts. Dialogue would replace lecture. Understanding semantics is a skill that can greatly improve human communication and assist students in intelligently accessing relevant information. It is not that people will suddenly become better or more ethical, but that the conditions responsible for hostile and egocentric behavior would no longer exist.

If we want children to achieve a positive constructive relationship with one another and become contributing members of society, a way to accomplish this is by designing an environment that produces that desired behavior. For example, when the children are interested in learning how to assemble a small motor vehicle, the design can require four children to lift the car while two others attached the wheels. The rest of the car is assembled in a similar manner, needing the help and cooperation of everyone to complete the vehicle for use. This enlightened form of education helps students understand the advantages of cooperation.

Exercise would not be mandatory or monotonous, and it wouldn't involve adversarial competition. It would be incorporated into the learning experience. For example, a craft shop the children enjoy using is located on a hilltop in the middle of a lake. To get there the children have to row a boat, and then climb the hilltop. This not only provides exercise, but also a sense of achievement, which helps their mental health and increases incentive.

One of the greatest limiting factors in human systems is our inability to grasp the significance of underlying forces and the extent to which environment shapes our thinking, values, and/or behavior. When we speak of environment, we mean all of the interacting variables, which are the prime contributors to our mindset.

Chapter Eleven

Lifestyles

What Do People Do?

From early civilizations to the present day, most humans have had to work to earn a living. Most of our attitudes about work may be a carry-over from these much earlier times. In the past, it was necessary for people to fetch water and carry it to their dwelling places. They gathered wood to prepare fires for heating and cooking and fuel to burn in their lamps. It would have been very difficult for them to imagine a time when water would rush forth in their own home with the turn of a handle; to press a button for instant light would have seemed to be within the realm of magic. People of ancient times probably wondered what they would do with their time if they did not have to engage in the burdensome tasks that were so necessary to sustain their lives.

Alleviating Human Pressures

Human beings free of debt, insecurity, and fear become much more amiable. With no one out to sell anyone anything or to deprive another of possessions or money, the basis for unhealthy human aggression is outgrown. People no longer are burdened by the nagging concerns that consume so much attention such as mortgages, health care costs, education fees, fire insurance, economic recession or depression, the loss of jobs, and taxes. With the elimination of these burdens and the removal of the conditions that create feelings of envy, greed, and competition, people's lives would be far more meaningful.

The aim of this new social design is to encourage a new incentive system, one that is no longer directed toward the shallow and self-centered goals of wealth, property, and power. These new incentives encourage people toward self-fulfillment and creativity, the elimination of scarcity, the protection of the environment, and most of all concern for fellow human beings. People would have the means and the time for intellectual and spiritual growth, and the time to realize what it really means to be human in a caring society. Rather than evolving into an age of leisure, truly intelligent and committed people would find very little "free" time, even

without having to "work" for a living. There is always need for better more efficient ways of doing things. People will want to participate in the society, seeing how it directly benefits their way of life and others, as things are constantly being updated and changed. There are no Utopias. The very notion of "Utopia" is static. The survival of any social system ultimately depends upon its ability to allow for change to improve society as a whole. However, today, most people are not prepared for changes in society either emotionally or intellectually.

Unburdened by survival concerns, people would have time for individual interests such as continuing their education. Education, if available to everyone without a price tag, could become a never-ending process. The cities of the future would be living universities. Most people would attend schools and university classes or engage in other activities. There would be classes for those interested in theater, photography, painting, ballet, and all of the arts at the music, art, and theater centers. People would be able to go to centers to work on or get help with their new inventions.

New horizons open up for people who dared not even imagine these possibilities in the past due to lack of money or time. It is painful to even imagine a life of limitless possibilities for those who have limited purchasing power.

Today there are many boats at the docks but they are rarely used, let alone available to the majority of people. In this new society, there are more than enough boats provided for anyone's use to enjoy as they wish. There could be a surge in the number of people learning to fly. Imagine all the other numerous hobbies and sports -- the list of what would be available for people to pursue is endless.

Picture a world opened up for everyone's exploration, with many people traveling throughout the world, helping in lesser developed areas to bring them up to the highest living standards possible in the shortest time. A world where there is no begging for nickels and dimes for medical and scientific research -- there are major programs for research and development in the medical fields where people can also participate and learn. This process would be the same in all other areas of society.

Rather than specialize, most people would become generalists, learning more about many different disciplines and how they relate to one another. In this way, people would be better able to participate in the development of ideas in many areas of society. There would be so much expansion and experimental exploration in all areas that there would no longer be a concern about who decides which experiments are tried and

which are not. Every new design would be subject to exploration, testing, and evaluation, and those proven worthy would be built.

People would take advantage of opportunities to learn how to better communicate with others and resolve differences without violence. They would be introduced to tools for problem solving enabling them to participate in a wide variety of fields and explorations.

The notion of sitting idly by or retiring would become obsolete. People would have so many options that for the first time they could understand what it really means to be a member of a global society with not enough time in the day to do all that they would like.

Without the wasted time, resources, lives, and energy consumed by wars and preparations for war, our energy could be harnessed toward constructive endeavors. Society would be able to devote much more attention and resources to controlling unforeseen variables like tsunamis, earthquakes, hurricanes, and other natural disasters that threaten our lives. This does not imply perfection. There are always challenges and unresolved problems. But there would be a great improvement in life styles and the global society could achieve the highest standards possible for the times, both materially and spiritually.

How Resources are Distributed Equitably

In the world of tomorrow, distribution of goods and services can be accomplished without the use of money or tokens by way of large distribution centers. These centers would be similar to expositions where the advantages of new products are explained and demonstrated. Exhibition centers would display what is new and available and would be constantly updated.

Throughout the communities, there would be 3-D flat-screen imaging in each home. If you desire an item, an order would be placed and the item automatically delivered directly to your place of residence without a price tag, servitude, or debt of any kind. This would include whatever people need in the way of housing, clothing, education, health care, entertainment, etc.

Raw materials for products can be transported directly to manufacturing facilities by automated transportation "sequences" using boats, monorails, mag-lev trains, pipelines, and pneumatic tubes. An automated computerized inventory system would integrate the distribution centers and manufacturing facilities, coordinating production to meet demand.

In this way, a balanced-load economy can be maintained. Shortages, over-runs, and waste are eliminated in this system.

If a person visits Yellowstone National Park, they simply check out a camera or camcorder, use it (even choosing to attend a class to learn the features of the camera and photographic techniques), and then return it to another distribution center or drop-off, eliminating storage and maintenance. This is similar to a public library, but much more informative and inviting. There are so many interesting activities and learning areas at the arts and science centers that people can wander in and out of the sessions until they find something that relates to what they're looking for.

In this cybernated future, a couple may visit an architectural design center where they sit in front of a clear hemisphere approximately six feet in diameter. One person describes the type of house they would prefer and their areas of interest. The house appears as a 3-dimensional image in the center of the hemisphere. It rotates slowly to present an overview of the interior and exterior. Then the other person describes their major areas of interest and preferences and may suggest a larger balcony. The 3-dimensional image is adjusted accordingly. When they finish requesting changes, the computer presents various alternatives to consider. After deciding on all the alternatives they are able to enter a sensorium to experience a walk-through of their design and continue to make changes. When they arrive at the final design, the construction procedures are set into motion. The computer selects materials for efficiency and durability. None of the architecture is permanent and can be modified and updated at the request of the occupants. This is real individual choice.

In a monetary system most people live near their work with a house, car, and lifestyle they can afford (or, all too often, cannot afford), rather than one they prefer. They are essentially only as free as their purchasing power permits. Many wealthy people select a residence solely to impress others with their status. A resource-based economy changes the function of dwellings from that of status symbol or basic shelter to a reflection of individuality and personal interests.

Family Matters

While new technologies are quite amazing, you may well understand that the most profound effects are not in the technologies, but in our lifestyles

In most cases, our current system requires both husbands and wives to work. Monetary economics undermines family cohesion and childcare.

Parents lack adequate time for their children, and are constantly stressed by ever-rising medical bills, insurance payments, educational expenses, and cost of living expenses.

It is in this area that one of the most profound benefits of our new civilization shows. Shorter workdays would provide greater opportunities for family members to pursue areas of personal interest. Free access to goods and services makes home a more pleasant place, and removal of economic stress will reduce family turmoil. Society is designed so people are free to choose their own interests, develop formerly hidden potential, and pursue dreams without government intervention or financial constraint.

Conclusion

The conflicts today with our fellow human beings are over opposing values and limited access to the necessities of life. If we manage to arrive at a saner future civilization, the conflicts will be against problems common to all humans. In a vibrant and emergent culture, rather than having conflicts between nations, the challenges we will face will be overcoming scarcity, restructuring damaged environments, creating innovative technologies, increasing agricultural yield, improving communications, building communications between nations, sharing technologies, and living a meaningful life.

People would be free to pursue whatever constructive endeavors they chose without economic pressures, restraints, and taxation that are inherent in the monetary system. By constructive endeavors, we mean anything that enhances the lives of the individual and others. With these major alterations, people would eventually live longer more meaningful and healthier lives. The measure of success would be the fulfillment of one's individual pursuits rather than the acquisition of wealth, property, and power.

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; a standard of living that would be continuously improved. When education and resources are available to all without a price tag, there will be no limit to human potential.

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