

## RECORD

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## KEYNOTE PRESENTATION

*Speaker: LEON C. MARTEL, Ph.D.\**

I am very happy to be here to keynote your annual meeting. As a futurist, I feel especially honored and a bit overawed because I am addressing an organization whose very profession involves making assumptions about the future. However, this does put me at ease somewhat, for I know you are aware that it is at best a rather risky business. In fact, it was that risk, I think, that a resident of another Hollywood, Sam Goldwyn, the movie producer, must have had in mind when he warned (I suppose with tongue in cheek), "Never make forecasts, especially about the future." Now the legislators of the state where I live, New York State, apparently wanted to make the warning even stronger, so you will find in the New York State Penal Code the following statute: "Persons pretending to forecast the future shall be considered disorderly and liable to a fine of \$250 and/or six months in prison." That should give you a little pause if you are practicing in New York. My favorite comment on the subject is attributed to that great American philosopher, Calvin Coolidge, who once said about the future, "If you wait long enough, it will be here."

The problem is, of course, if we wait long enough, it will be too late. We need to know now as much as we can about what will happen tomorrow, and yet it seems to be more and more difficult to do that. I suspect there is not a person here who would deny the current times seem to be characterized by greater uncertainty, greater instability than previous years. In spite of the instability and in spite of the uncertainty, I really believe that a good deal of the future is knowable. I think the key to that knowledge is to adopt a long-term perspective, that is, not to focus on the present, not to look at current events, not to be overly concerned with today's trends, whether they be megatrends or mini-trends; but to take a longer look, a broader look.

You find that in most future studies this is rarely done. The usual methodology is to begin with current trends and to extrapolate them forward on a straight line. This was the case with probably the most famous future study of our time--and I think that its effects also were the most pernicious--and this was the study that was sponsored over a decade ago by the Club of Rome, entitled "The Limits to Growth". Its title really summed up its thesis, which is that we had to seriously limit growth in the future or we faced certain disaster in the next century. It was based on trends at the end of the 1950s and beginning of the 1960s. These were then extended in an elaborate computer simulation which gave them considerable verisimilitude. Those projections--because the assumptions were wrong, because they were simply made in a straight line fashion--have turned out to be wrong.

\*Dr. Martel, not a member of the Society, was formerly Executive Vice President of The Hudson Institute and is a political scientist and futurist.

More recently we have seen another widely publicized and widely acclaimed study, again following the same methodology. This is the Global 2000 Report to the President of the United States, issued a little over three years ago at the end of the Carter Administration. This is a huge report. It is the size of a big city phone directory, about 1,000 pages long. It begins with these four words: "If present trends continue. . ." At that point, you can stop reading. If history teaches us anything, it is that present trends never continue. They may get better, they may get worse, but they rarely go on as before. On the other hand, what the long-term perspective shows is not the continuation of present trends, but their change. And change, after all, is not random. It is not willy-nilly, helter-skelter; change does have a pattern. It has a direction, a magnitude, a duration, a pace, and we can discover a good deal about that pattern. And so, much of the future can be seen and understood.

My argument this morning is simple. In the future there will be more change affecting more areas of our lives and at a faster pace. To survive, and to succeed, because we want to do more than survive, we need a new approach to the future, the approach that I call in the book Barbara mentioned, managing change. That means first, we need to understand the changes that are coming, and second, we need to make use of them. This is what I want to talk about this morning: some of the major changes of the future that will affect the actuarial profession and some general suggestions for managing them.

I want to begin by making a distinction between two basic kinds of change that occur in the world. One is long-term structural change, and the other is short-term cyclical change. As you will see, each has distinct and unique qualities, each requires a different response, and both have very important implications for the future of your profession.

Let me start, then, with the long-term structural change. What I mean by this is a basic change in the structure and operation of some aspect of society, one that is fundamentally different from what preceded it and to which it will not return. It is a change that is permanent, non-repeating and non-reversible.

One of the most important of these long-term structural changes, a change that we are in the midst of now, is a change in what we can call the basic transforming source of society. By that I mean the source that takes the raw materials of nature and transforms them into useful and valuable products. For most of human history, the basic transforming resource was simply labor—human labor and the labor of animals. When applied to the soil or to the forest or to the sea or to other animals, human labor brought forth food, shelter and clothing.

Then recently, recently in human history anyway, a little over 200 years ago, a new transforming resource came into use, a much more powerful one. That transforming resource was energy: the energy of steam, and then electricity, principally from the burning of fossil fuels. But this transforming resource was far stronger and more efficient than human labor. It made it possible, with factories and with mass production, to greatly increase the production of goods, and with modern transportation, to distribute them widely and more efficiently.

Today, energy is being rapidly replaced with a new transforming resource. That new transforming resource is information. It will be used to transform things, to create new products and new services, and to add value. Moreover, there is something unique about this transforming resource, in addition to its more powerful nature, and that is, in a very interesting way, it alters our prospects for the future, making the future far more hopeful than we have been led to believe.

Consider for a moment the qualities of the two transforming resources energy and information. The characteristics of energy have tended to constrain its use. Sources of energy for the most part are limited, perishable over time, more expensive. The vocabulary of energy increasingly, as we know, has been one of scarcities, shortages and shortfalls. But the characteristics of information are very different. We are not running out of it. We are creating more and more of it. What is created does not perish, is not lost, is always potentially available. Its cost is not steadily increasing; in fact, as we know, it is steadily decreasing. So here we have a new transforming resource for society that is abundant, not scarce, that is cheap, not dear; and because of this, our ability to deal successfully with the problems of the future will grow and not diminish.

This change in society's transforming resource has also brought a long-term structural change in society's economic activities. When human labor was the principal resource, the dominant activities were extractive activities, like agriculture, fishing, lumbering or simple mining. Most of the labor force was involved in these activities, and their output constituted most of our nation's output. As energy became the transforming resource, the predominant activities became industrial: manufacturing and construction. There were still extractive activities, of course, but they were done with a smaller percentage of the labor force, and constituted a smaller part of the nation's total output. Today, and in the future, as information becomes the principal resource, the dominant activities are becoming service-sector activities: trade, finance, law, education, health, government, entertainment, and of course, your professional services. There are still manufacturing activities, but like the extractive, they are done with a progressively smaller part of the labor force, particularly as more automation is introduced, and they constitute a progressively smaller part of our gross output. In the United States today, 3% of our labor force is on the farm, and yet that 3% produces more than ever before. 22% of the labor force is manufacturing, and that percentage is falling rapidly and will probably fall to 10-11% by the end of this decade. Almost 75% of the labor force is employed in service-sector activities, contributing two-thirds of the total U.S. output. So here is another basic long-term irreversible structural change in society.

Accompanying the long-term change in economic activities is long-term structural change in economic growth and in incomes, which are very important to you. When the extractive activities were dominant--agriculture, fishing and so forth--there was little or no economic growth, and per capita income was quite low. But when industrial activities began to develop, inputs of capital and labor then produced outputs that were proportionately greater in value than the inputs. And that meant, of course, rising economic growth and rising per capita incomes. Now, as service-sector activities are becoming more important, growth rates are beginning to slow. The reason is that many service-sector activities--not all of them certainly, but many of them--do not contribute to growth. This

is certainly true of government, one of our better-known non-growth contributing service-sector activities. It is also true of many professions, such as health care, for example, where there are real limits to increasing the productivity of physicians, psychiatrists, dentists and nurses. It is true of many personal services, such as bootblacks and barbers. It is certainly true of most sports and entertainment: you cannot increase the productivity of a baseball team or a string quartet.

As these activities become more important, there is a long-term secular slowing down of economic growth, and with it a leveling of per capita income. But that income is now at a much higher level because we have passed through the transition of the industrial era that brought higher median incomes, and although per capita income is no longer rapidly increasing, efficiencies in extractive industries and in manufacturing still are continuing. That means less is required for our basic needs and more is available for our wants, the things we would like to have. Thus, as per capita income slows in the most advanced developed nations, still for a time, discretionary income will continue to rise; and with it, of course, the individual's asset base. It is interesting to note that today the average family in this country has assets of over \$100,000--homes, cars, insurance, and other kinds of property. This is about fifty times in current dollars what it was in the time of the Great Depression. So here, too, is another long-term structural change in economic growth and incomes.

Finally, economic growth and resulting prosperity, wherever they have occurred, have brought another long-term structural change, one that is very well known to you because it concerns population. There are two aspects to this change. First, with development of economic growth, there is a lowering of population growth rates. Most of us, I am sure, were brought up to believe that the world was experiencing a population explosion which depicted the population doubling in shorter and shorter periods of time, rising on a steep exponential curve to what would appear to be certain disaster. Certainly, it is true that the first effect of economic growth--because of better food distribution and improved health care--was to decrease death rates and to rapidly increase the population. But there has been a second result, just as important. We see that as economic growth continues and matures, it brings high levels of prosperity and technology. This reduces the need for large families, encourages parents to have fewer children and, at the same time, provides the means to do so through family planning and improved means of birth control.

In the United States in the 1980s and 1990s, the rate of population growth will steadily fall, bringing an eventually stabilized population in about fifty years, perhaps at a level of around 300 million, about 65 million more than today. The same process is happening elsewhere, even in the developing nations, where the rates of growth are higher, of course, but in many cases where they are falling even faster than they have in the developed nations. As a result, that fiercesome exponential curve is turning over. The peak in worldwide population growth rate has been passed. This means we turned a great corner in human history, one that will not be turned back. This long-term change really means that the population bomb has been defused.

The other aspect of population change which is even more important to you is, of course, the raising of life expectancy. The latest United States figures which were released last week by the National Center for Health Statistics show that even if 1982 age specific mortality rates do not

change in the future, an American born in that year can expect to live 74.5 years; women - four years more, men - three years less. These are the longest rates we have ever achieved in our history. Most of the lengthening of life expectancy to date has been the result of reducing infant mortality and reducing death from childhood diseases. Further changes in the future will come from the curing of diseases of the later years of life, notably heart diseases, cancer, strokes, chronic pulmonary diseases and so forth. This means that life expectancy could be lengthened by as much as another twenty years, perhaps to age 95 or thereabouts. Beyond that there is very little prospect now for a further extension. It just seems that by the tenth decade of life, even if the body can manage to avoid all the accidents and other ailments that may occur, it simply begins to wear out and wears out all over. Many parts can be replaced, it is true, but not all of them. As for immortality, I think it is just a fantasy and that is probably just as well for your profession. After all, it would put a lot of actuaries out of work, to say nothing of what it would do to pension funds. So here is another long-term structural change. Slower population growth, increasing life expectancy leading eventually to a stabilized but older population.

What do these structural changes mean for the actuarial profession? First, the new transforming resource in society is information, and the technology for handling it has grown immensely, from processing and storing it to distributing it and exchanging it; and the technology is still largely in its infancy. In the controversy over whether or not computers will be more powerful than the human brains, the answer is very easy to make. Yes, for many functions. There are, after all, severe design limitations to what we have up here on top of our necks, but there are no design limitations to the capacity of computers that we can build. An immediate result of this, of course, has been to increase the variety and kinds of financial services available: accounts, funds, credit instruments, insurance, pension plans, and so forth. These could not be offered in many cases without electronically formatted information. And so the variety and number of actuarial services need to grow with the new technology and with the new financial services. Obviously, your own rewards will be proportional to your ability and willingness to understand this long-term change and to use it. So I second the interesting presentation just given of your new textbook. It is clearly right in line with this requirement.

Second, in this country we have a service-sector dominated economy, and it is growing more so. You are a service-sector activity, and most of you serve other services, including life, health, casualty insurance, health service organizations, employee benefit organization plans, government agencies, educational institutions, and so forth. These services are going to continue to grow and new ones will be added, and your profession and its activities will grow with them.

Third, although per capita income will slow, discretionary income--that is, income for the things we want to have--is going to continue to grow. Coinciding with this is a very interesting change in attitudes and values that comes with prosperity: an increased interest in preserving the more that we have in our more prosperous lives and giving higher priority to the values of health, comfort and safety. This means that as we get more prosperous, we seek more protection, and we take less risk. This translates into the purchase of more insurance, more health and pension plans, and the increasing need, of course, for actuarial services to go with them.

Fourth, the long-term structural change of a steadily aging population means a regular review and recasting of your assumptions, but it also means an increasing demand for retirement income support and for health care as the need for health care increases with age. Meeting this demand calls for important changes both in the public and private sectors and within a very few years.

Regarding Social Security, we have, as you know, with recent legislation dealt with only the immediate problem. We did that by compromise legislation that makes small adjustments to the basic law and allows for inter-fund borrowing. This, and the maximum contributions during that decade of the maturing baby boom generation, will get us through the 1990s and will, for a time, make the situation look much better. But the demographic and economic realities of more people drawing benefits longer, and fewer people making payments in a slower growing economy, will again begin to stress the system and possibly cause a far worse crisis by the second decade of the next century. This is a long-term structural change which we have not yet begun to face.

Regarding health care for our longer living population, we have not even gotten to the stage of dealing with the immediate problem, the Medicare problem. The fixed fee system that was instituted just ten days ago covers only Medicare patients and even that will not prevent the eventual bankruptcy of the Medicare program, perhaps as soon as 1987 or 1988. In fact, fixing fees for Medicare patients will give hospitals the incentive to shift cost to privately insured patients. An aging population, and rising hospital costs that are not constrained by normal market factors, call for fundamental changes in the law, not a patchwork approach. Nothing important will happen next year, as we all know, because next year is an election year. During election years very little effort is made to either increase government programs or to increase revenues through new taxation. However, immediately after next year we will have to see moves toward the reform of Medicare financing and cost containment, probably extended to all patients including the privately insured.

These are several long-term changes, then, and some of the implications of them for your profession. Others certainly could be added, but I think these demonstrate that major structural changes are underway; changes which create new situations and require new responses.

What about the other basic kind of change: short-term cyclical change? This is change that repeats, usually following the same pattern and usually within relatively brief periods. Short-term cyclical change is also very important to understanding the future, but unlike the first kind, it does not usually involve a fundamental alteration in the structure of society. There are many examples that can be given of short-term cyclical change: supply and demand is one, organizational changes from decentralization to centralization is another, and cycles of fads and fashions is yet another.

I want to talk about just one kind of short-term cyclical change here. It is one that is particularly important to your profession, and that is the business cycle of our national economy. It is not an easy subject to discuss. It seems there are as many versions of what is happening in the economy as there are economists. In fact, there appears to be more since economists do change their minds quite a bit. I think it was George Bernard Shaw who said, "If you took all the economists in the world and laid them

end to end, they would not reach conclusion." I like even better the comment attributed to Harry Truman. Apparently he was getting a lot of economic advice, not always consistent. Finally, in exasperation, he said; "What I want is a good one-armed economist. You fellows all say to me, 'On the one hand, Mr. President. . . , but on the other hand, Mr. President. . .'" Harry felt that with a one-armed economist he might get one consistent view.

What, then, can be said about business cycles? The first point, the obvious point, is that they are cyclical. They come and go. In the United States, since 1796, there have been forty-two down-turns in the economy. Every one has been followed by an upturn, then by another down-turn. There are no exceptions. Now each cycle, of course, has its own rise and fall and rates of growth in economic activity, employment, and so forth. But before we look at the current cycle--and I will do that in a minute--we should step back and ask if these cycles display a longer term pattern. The answer is they seem to. It is a very important pattern for you, because it is a pattern of inflation.

Although the rate of inflation is down now, since the 1960s there has been a sustained rise of prices. And, as a result, interest rates today are still at inflated levels, into double digits for any kind of long-term borrowing one might want to do. The last time a pattern like this was seen was over 300 years ago, in the late 1600s. At that time, the influx of precious metals from the New World caused a sustained rise in prices for several decades until a new level was attained. There was no retreat from that level. Prices fluctuated around that level for several centuries until just after World War II.

Now we are into a new rise of prices, spurred by economic growth, the growth of the post-World War era. Economic growth creates rising expectations, modern communications convey news and images of what others have and that stimulates the expectations further and provides the means to voice them. The response to this in most developed nations has been to stimulate demand, that is, to institute public policy programs, entitlements, income transfers schemes, outright grants, and so forth, that create money and credit. However, money and credit are being created faster than goods can be created. The result is too much money chasing too few goods and, as we all know from Economics 1, that means inflation. Furthermore, during periods of upturn there is a tendency for producers and workers to bid up the prices of their goods and labor, especially to make up for losses, either real or imagined, that they have felt. So, in spite of the slowing now, powerful forces are at work likely to sustain a pattern of inflation from at least five up to 10% and probably a little higher for the rest of the 20th century and into the first decades of the 21st century.

What about the current business cycle? Well, the recovery has been strong in many ways and has been following the usual pattern of recoveries: fast early growth followed by slower rates with positive growth still underway. The recovery was consumer-led in the beginning, and then greater industry involvement occurred as inventories fell and had to be built back up again. Plant utilization has increased, capital spending is now slowly increasing, and unemployment, the last figure to recover, has been falling.

However, there are some non-typical aspects of this recovery, and the most important is the extremely large federal deficit, around the neighborhood

of \$200 billion dollars. This, in turn, keeps interest rates high because, of course, it brings about the fear of "crowding out" as the federal government comes to the credit markets with large demands. And, of course, such a deficit contributes to expectations of inflation in the future, especially when we see no prospects of that deficit falling in coming years. If high interest rates continue, they will cut short the upturn of the current business cycle because they will restrain consumer buying, especially for big ticket items. In fact, high interest rates are likely to lead to a change in the pattern of consumer buying, namely that more lower-cost non-durables will be purchased at the expense of longer-term high-cost durables. Also, they are going to limit business borrowing because to expand capacity, to retool, to increase hiring, business needs to borrow. If this happens, we will be quickly into the next cycle, that is, the beginning of a down-turn.

Is there any way out of this, any way to prolong the recovery and to soften the down-turn? Certainly, the strong recovery underway is going to help because economic growth does increase revenue, it does lower government expenditures and that will help reduce the deficit. And we should not forget this, that recovery does help bring down deficits. But more help is needed. Recovery alone will not close the gap. Attention needs to be paid to fiscal policy, expenditures and revenues.

Again, next year is an election year, and so there will be no big effort to reduce federal spending or to increase taxes. The deficit will stay high throughout 1984, threatening to cut the recovery short. The hope is, of course, that during the elections both parties will make clear that planning to attend to the deficit after the elections is their first order of business. In other words, they will seek to make economic growth a higher priority than redistribution of income. If this occurs, it would represent really a revolutionary change in the pattern of the past fifty years, a move away from plans to redistribute income and a move in the direction of increasing economic growth, following John F. Kennedy's maxim that a rising tide lifts all boats. We do see this beginning to happen now. Even with the most liberal democratic candidates, there is more talk in their speeches and in their positions about the importance of economic growth and less about new plans for redistributing income. If this can be carried through--and certainly it is a big if--the economic boom could remain strong through the mid-1980s. There are short-term changes, too, those in the business cycle and others, that have to be factored into your calculations about the future.

These are examples of the two basic kinds of change that are occurring and will be occurring in the future, and some of the implications that they have for your profession. Preparing for the future requires that they be taken into account, that a deliberate effort be made to manage these future changes. That effort includes recognizing that change is occurring, understanding the kind of change it is, and calculating its likely future course. How each of you faces this is certainly a function of the organizations you serve, the type of work you do, and your own training and experience. But it is possible to offer some suggestions, applicable to all of you as you face the future in your professional lives and in your personal lives as well. Let me finish with two of these suggestions.

The first is to adopt a long-term perspective. The long-term perspective sensitizes us to the most important wisdom that we can have about the



future. That is the wisdom that the future will be different. It will not be a simple continuation; a simple extrapolation of what is happening today. It will not be the continuation of present trends. The near-term view; the short-term view, gives you just a fragment, just a moment, the present. The long-term view shows the trends, the direction and pace of those fragments, of those moments. Adopting a long-term perspective can truly mean the difference between a future by design and a future by default.

The second suggestion is to understand change and to use it. This is difficult because we are comfortable with the familiar, with the regular, with what we know works. We like to plan on the basis of continuities. Changes are worrisome. Changes disturb us, and our reaction frequently is to ignore them - even to resist them. And yet today change is the norm; it is no longer the exception. It is occurring in more areas, on a larger scale, at a faster pace than ever before. And it can be used to bring greater gains than continuity. Change is, after all, the alteration in some way of present conditions. And so it offers opportunities for exploitation far greater than would exist if those conditions remained unchanged. You can compare it to the electricity stored in the battery. It is there, but until you tap it, release it, you cannot use it. In the future, those who succeed will not be those who avoid change. Those who succeed will be those who use it and who make change their partner. There is, I think, every reason to believe that for those who see in the future reason for opportunity and not just cause for concern, the future will indeed be one of hope.

Let me close with a metaphor that expresses this hope. This certainly is the note that my studies of the future leave me with, and it is the note that I want to leave with you. It is a metaphor that you may have heard because it has been used frequently by doomsayers and gloomsayers, but I do not count myself in their number, so I look at the metaphor a little differently. It goes like this. It depicts the five billion year physical history of the earth so far as a twenty-four hour day. On that basis human existence has taken just the last five minutes, recorded history just the last few seconds. The implication of the metaphor stated in that fashion is that midnight is near, that the day is almost over, and the earth too. I prefer to look at the metaphor differently. There is a general guess among geologists and physicists that the earth will last perhaps ten billion years more. If so, then a third of the earth's history has passed. On the basis of that twenty-four hour day, it is now 8 a.m., the sun has just risen, the day has just begun, and it is time to go to work.

