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Session 1GS
The Old-Age Crisis

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Summary: This session discusses the aging of our society. Topics include how fertility and mortality affect aging and the effects of changing demographics in the U.S. There will also be a discussion of solutions to the aging of the population and how these solutions will create more challenges and opportunities for actuaries.

Mr. David M. Holland: Larry Zimpleman, President of the American Academy of Actuaries, will give us an update on the Academy's current activities.

Mr. Larry D. Zimpleman: I'll focus my comments more on the pension and health areas because they're the designated specialities for this meeting. Health issues continue to be prominent on the public policy agenda and within the American Academy of Actuaries. As of May 1997, the Academy testified three times at Congressional hearings. In February 1997, Alice Rosenblatt addressed Medicare Payment Policy before the House Ways and Means Committee. In March, Bill Bluhm told the House Commerce Committee about the need for solvency standards for Medicare Provider Service Networks and Mike Thompson testified before the Senate Finance Committee on proposed changes to the Medigap policy. The opportunities allow the Academy to continue to build its relationships with members of Congress.

In recent months, we've received direct requests from Senator John D. Rockefeller (D-West Virginia) and Senator Thomas A. Daschle (D-South Dakota), among others, to study proposals to expand health insurance coverage for children. Medicare and

Social Security are pressing national issues that absolutely require the involvement of the actuarial profession.

Our Academy Senior Pension Fellow, Ron Gebhardtsbauer has been very active in discussing possible solutions to the financial problems of the Social Security Program. Ron has participated in open forums with members of Congress including Senator Robert Kerrey (D-Nebraska) and Senator Ben Nighthorse Campbell (D-Colorado). Ron's active role in that debate has led to his work with Representative Jim Kolbe (R-Arizona), who leads a bipartisan study group on Social Security. In the next few weeks, Ron will participate in meetings with other members of Congress, including Senator John Warner (R-Virginia) and Representative Charles W. Stenholm (D-Texas). In its public response to the Social Security Advisory Council Report, the Academy continues to encourage Congress to act sooner, rather than later. The Academy's letter to the editor appeared in *USA Today, The Los Angeles Times*, and *The Washington Times*.

The Academy continues to say that today's solutions to ensure the long-term solvency of Social Security and Medicare will be much less severe than action down the road, if Congress waits for insolvency. In its statements to Congress and the public, the Academy does not endorse privatizing Social Security, but acknowledges that privatization is worth including in the public debate of possible solutions.

I want to briefly mention a seminar the Academy sponsored recently on pension regulatory issues. Regulators and actuaries in the U.K., Canada, and the U.S. gathered in Washington to discuss issues affecting pension actuaries and the regulation in those three countries. The seminar was part of an ongoing effort, led by the Academy's Pension Vice President, Vince Amoroso, to establish a dialogue between pension actuaries and regulators. We intend to continue to press forward on this important subject.

Now a few comments on professionalism. In our recent survey of actuaries, the function most closely identified with the Academy by both members and nonmembers was professional actuaries are developing standards of practice through the Actuarial Standard Board (ASB) and upholding them through our counseling and discipline process. The increasing prestige of the profession and the value of actuaries to our publics is related to the professionalism that each of us uses in our daily practice.

Finally, I just want to close with a quick sales pitch. If you're not currently an Academy member, I hope you'll consider joining. I believe it's important that all of us in the profession support the Academy's activities and public policy and professionalism. If you have any questions about the Academy, please call me, write me, or somehow contact me. Also feel free to contact the Academy Office in Washington for help. I hope this has given you some sense of Academy activities. As the Academy President and a Society of Actuaries (SOA) member, I'm proud of the way our two organizations complement each other and work together for the good of the profession. Our profession faces many future challenges, but by strengthening actuarial professionalism and our role in the public policy, the Academy is doing its part to build a stronger profession for the 21st century.

Mr. Holland: I would like to echo the sentiment that this is something that actuaries who are based in the U.S. and have practiced in the U.S. need to support. I'm envious of our colleagues in the Canadian Institute of Actuaries (CIA) and the support they have. I hope one day that we will rival that here.

In looking for a keynote speaker, one goal is to find someone who is an eminent authority. Another is to find someone who is a distinguished scholar and who has had influential positions. We're fortunate to have someone who meets all of these requirements and who is also a Fellow of the SOA and for many of us, a mentor and friend. Our keynote speaker, Dr. James Hickman, has been a member of the SOA since 1958. He served on the Society Board of Governors, as both a member and a vice president. Jim is also one of the trustees of the Actuarial Foundation, which the SOA established. Jim is Emeritus Professor and Dean of the Business School of the University of Wisconsin at Madison. He has a bachelor's degree in mathematics from Simpson College in Indianola, Iowa. His master's degree and doctoral degrees are from the University of Iowa in mathematics and statistics. He served on the statistics department faculty of the University of Iowa for 11 years before moving to the University of Wisconsin at Madison. I'm also happy to announce that Jim is the holder of the Thomas P. Bowles Jr. Chair of Actuarial Science for 1996 and 1997 at Georgia State University. Jim is a director of Blue Cross/Blue Shield of Wisconsin, a position he has held since 1986. For the last eight years, he has served as a director of the board of pensions of the Presbyterian Church in the USA.

Dr. James C. Hickman: Most of my professional career has been spent trying to understand, and perhaps to advance and to communicate the ideas of actuarial science. Therefore, it is an honor to address you and I'm deeply grateful. In his introduction, as in all things, Dave spoke the truth. I did serve as the Bowles Chairperson last year, and two of the components of the program emulate that Bowles symposium in September 1996. My presentation is obviously related to it, as is the lunchtime presentation by Mike Kell.

I think it is important, if you get confused about all of this, that we kind of separate our two presentations. I will give a typical professorial pedantic speech. Mike's will be full of imagination and jazz. I hope you find that helpful in keeping things straight.

We are going to be talking about aging. We all grow older. We grow older as individuals. We grow older as societies. The evidence for our individual aging comes with the inevitable aches and pains of that process. The evidence that we grow older as a society comes from an endless discussion in the media about entitlement programs, the payroll taxes that we pay, and the advancing cost of employee benefits. It is also evident when you see some old timers behind the counter of McDonald’s. This is a fundamental fact for us as individuals, and for the society that we, as actuaries, serve.

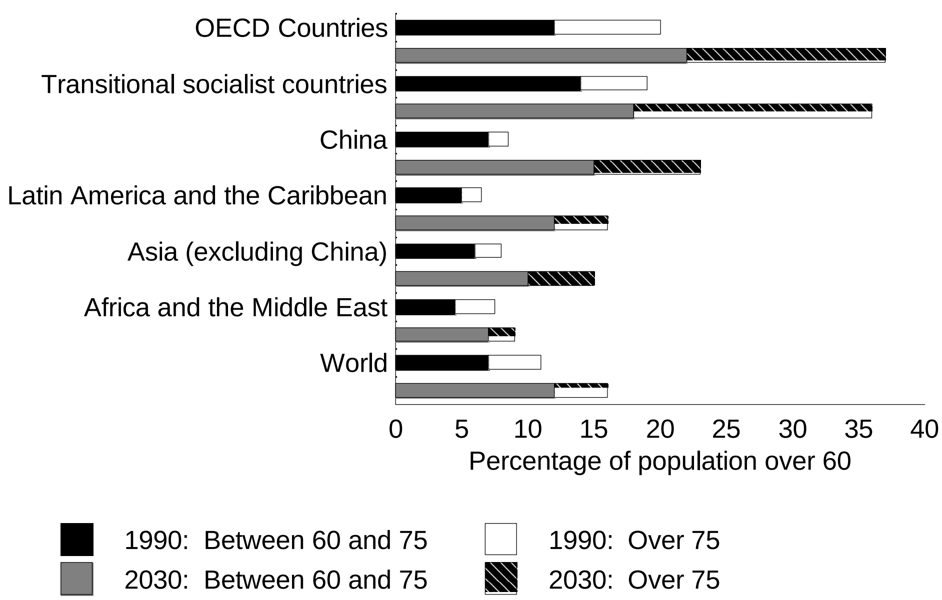
What caused this aging of our society? There’s only one way to get here and there’s only one way to leave. It has to do with fertility and mortality. By historic standards, most of the developed nations of the world are at almost low points in their fertility cycles. Here in the U.S., in terms of fertility, we’re almost exactly at a zero population growth rate, there is a little growth, bumping around two per thousand. By historic standards that is low. Mortality has also improved. To some of us, it was a surprise that started around 1970. We made significant advances against the major killer: cardiovascular disease. The combination of these two forces, of course, has produced an aging population.

Let’s turn now to some graphic indicators. The graphic indicators will violate the very motto of our profession, because they will convey not facts, but impressions. They will convey impressions, largely because our time is limited and because of visibility problems. There are many of us and some of the numbers may be less than apparent to you. Let’s turn to the impressions.

Chart 1 came from a publication of the World Bank. What you see represented here are the areas of the world, including the Organization for Economic Cooperation and Development (OECD) countries. OECD countries are the highly developed countries of the world. There are also bars for the traditional socialist countries, (the old USSR and Eastern Europe), China, Latin America and the Caribbean, Asia excluding China, Africa, and the Middle East. There is also a bar for the total world. The bars show the percentage of the population that’s above certain ages. So a long bar means that there are more old people. The top bars for each country reflect today or 1990. The bottom bars look forward some years to about 2030. The extra shading on the bars, the little pieces at the end, have to do with the proportion of the population that is above age 75. The stem of the bars has to do with those between 60 and 75. What one can conclude from that, which validates my title, is that there is a graying of the developed world.

The OECD bars extend far to the right of the rest of the world. By the year 2030, 32–33% of the population of highly developed countries will be above age 60. Each of the areas have bars that extend further out in the future than they do now, but the big change will have to be made by those of us that live in the developed nations. China is an especially interesting example, in part, because there are about 1.2 billion Chinese. It's one of the few nations that has had a double-digit growth rate in the recent years. In the future, as we attempt to diversify our investments, we might do well to look at traditional mean and variance components, and demographic profiles of other nations, seeking out nations that may be dissaving in the developed world. The big picture that I want you to take from this is that we are talking about something big and something important that will fundamentally change, (and is already changing) the nature of our society. In the developed world, that change is coming like a freight train.

CHART 1
PERCENTAGE OF THE POPULATION OVER 60 YEARS OLD
BY REGION, 1990 AND 2030

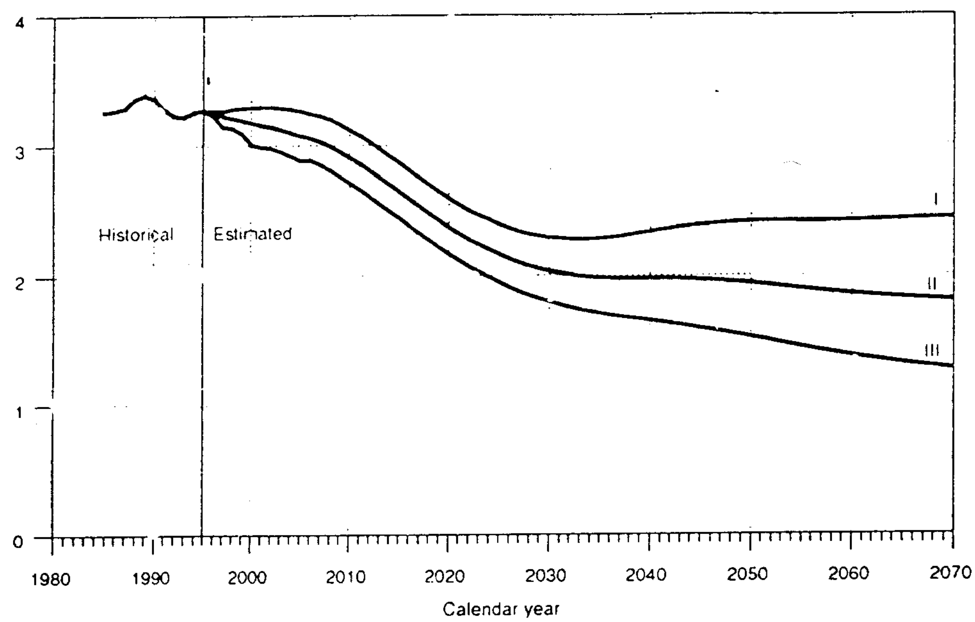


Just a few moments ago, Larry talked about the Academy's position that it is important that we act sooner rather than later here in the U.S., with respect to problems in Social Security and Medicare. I endorse that position. As a statistician, I would talk about it in degrees of freedom. For every year that goes by, we lose a few degrees of freedom and you do not want to do that.

Now let's go to another graph that is perhaps the most familiar aging graphic to all actuaries, at least those in the U.S. I obtained Chart 2 from the Trustees' Report;

that is the Trustees of the old age, survivors, and disability system from 1996. It shows the number of workers per beneficiary of the old age, survivors and disability insurance (OASDI) here in the U.S. Although the definitions may be important, it is once again the impression that is really important. You will note that going from 1980 to where we are today, the three lines jump around a bit. You can count from the bottom; to see that it is currently a little bit more than three workers per beneficiary. Then those three lines spread out over the graph.

CHART 2
NUMBER OF WORKERS PER BENEFICIARY



Those three lines, of course, relate to the collection of assumptions used by the Office of the Actuary in conveying to policymakers some sense of uncertainty with respect to population projections. The one in the center is the one that most of us zero in on because that set of assumptions has been massaged to be the most likely type of assumptions. The ones labeled I and III give us some sense of plausible scenarios, albeit less likely scenarios, that might produce somewhat different results. Once again, the key is that those lines go downward before somewhat stabilizing after 2030. They move from three workers per beneficiary, down to the order of about two workers per one beneficiary. Once again, that's big stuff. It has to do with the economics of the systems as well as the very nature of our society.

The most natural question in the world is, will it change? For it to change, one of two things has to happen. First, the fertility number has to change from being at zero population growth by going either up or down. Fertility numbers can change because of birth control technology, economic reasons, or social reasons. I, for one, would not want to bet that it bobbed up, for the simple reason that, although technology and economics are important, fertility is also controlled by society. I suspect that the social change, with the integration of women into the work force, has fundamentally changed fertility rates, and I do not expect a rollback of evolution.

Mortality is the factor that would have to change. Obviously there are dreadful things that could happen that might make mortality statistics increase. There are also many things that could make it drop even further. Your society, with financial support from the Actuarial Foundation is, as we speak, starting on a project studying mortality projections, particularly with reference to Social Security in Canada, the U.S., and Mexico. They have the hard task of projecting, using ingenious data analysis techniques of what happened in the past and weighing expert opinion. This is a very important project.

I believe that as actuaries, we have to bet on the direction of mortality. I would bet on improvement and maybe dramatic improvement, largely because of success in the human genome project. That amazing project will, for biology, be comparable to completing the periodic table for chemistry. It will now be possible to design therapeutic treatments, drugs that are tailored not just to the animal or the tissue, but to the cell. The implications are remarkable. At this point, I hope we have established a factual foundation for the idea that we belong to a part of the world where aging has become extraordinarily important, and I hope we've established the fact that it probably will continue. This, of course, poses actuarial challenges. This is not a disaster. It is an opportunity.

When one begins to view an opportunity or a challenge, my advice is to read the classics. That's sometimes not a real good thing to do, because if you are going to do research, don't read. What you will find out, of course, is that Adam Smith has already said most of the important things that can be said about economics, and Isaac Newton really did a great deal for physics. Let's follow that advise and turn to the classics.

Let's turn first to Adam Smith. Adam Smith was a member of that remarkable period called the age of enlightenment. It started with the glorious revolution in 1680 in England. Let's say it ended with the French Revolution 101 years later. It produced not only the U.S. and the great political documents—the Declaration of Independence, the Constitution and the Federalist Papers—but it also produced our profession. This was the century that included the work of Edmund Halley, Abraham de Moivre, the first person to make his living as a consulting actuary, Richard Price, and William Morgan; it was an amazing century.

One of the stars of that century was the Scotch Philosopher, Adam Smith. Adam Smith published two books. I recommend both to you. The first, published in 1759, was called *The Theory of Moral Sentiments*. The second, published in 1776, was called *An Inquiry into the Causes and Nature of the Wealth of Nations*. The year 1776 was, of course, the year the Declaration of Independence was written. Smith knew Benjamin Franklin and in fact quotes Franklin. Smith was a grand part of that set of ideas of which the U.S. is a living embodiment.

One interesting note about Adam Smith. If you made a list of the people who have inhabited this earth that would not be a good gypsy, Adam Smith would be on the top of that list. At age four, he was kidnaped by the gypsies. They found that he wasn't a very good gypsy and gave him back to his parents.

He lived, by and large, a very tranquil life. I would like to turn to his book that had such a profound impact on economic thoughts and the wealth of nations. The words that I shall read are the first words of that great book:

> "The annual labor, in every nation, is the fund which originally supplies it with all the necessary conveniences of life, which it annually consumes and which consists always either in the immediate produce of the labor or in what is purchased with that produce from other nations accordingly. Therefore as this produce or what is purchased with it, bears a greater or smaller portion to the number of those who are to consume it, the nation will be better or worse supplied with all the necessaries and conveniences for which it has occasion."

Then Smith goes on after those magnificent sentences with: "Must every nation be regulated by two different circumstances?" Drill this into your memory: "By the skill, dexterity and judgment, with which its labor is generally applied and second by the proportion between the number of those who are employed in useful labor and that of those who are not so employed." There my friends, is the encapsulation, written 220 years ago, of the issue before us.

There were other members of that great group of thinkers. Let's turn to another one, the gloomy Malthus. Thomas Robert Malthus was a man who thought no small thoughts. He always went for the big picture stuff. For example, he set out with the Herculean task to investigate the causes that have impeded the progress of mankind towards happiness, and he tried to examine the probability of the total or partial removal of that cause in the future. This was a guy who did not stop with small ideas. It was in his great essay on the principal of the foundation of a population as it effects the future improvement of society, where he wrote of two streams: first, a deductive stream, and second, an analytic or empirical stream.

For the deductive stream, there are two fundamental axioms, for which I hope you will agree. Axiom one, food is necessary for the existence of man. Two, the passion between the sexes is necessary and will remain nearly in its present state. From those two axioms Malthus drew some profound conclusions. Malthus also analyzed data, some of which he got from Dr. Franklin. Of course, he had the great conclusion that "the cause to which I elude, is the constant tendency of animated life to increase beyond the nourishment prepared for it." Malthus warned against expediential population growth. Most of today's economists say Malthus was wrong. He predicted that enormous technological revolutions in agriculture, and the great coming on stream of Canada, the U.S., Argentina, and Australia would cause a famine that he thought might limit human population, but these predictions have not yet occurred.

Nevertheless, Malthus was at his harsh right, whether you value the quality of life, or the environment, let alone the ultimate bound of the limits of agriculture production. Human population cannot increase without bound. But Malthus put no bounds on dexterity, skill, and knowledge. Since you and I grew out of an analytic way of thinking of problems, we tend to think in gain theory and decision theory, in terms of proposing strategies. Strategies list ways of meeting a problem. We first have to formulate them, and then we have to evaluate them. We often will start with what are called pure strategies that are internally consistent, and we work on one aspect of the problem. These are terms that come from game theory.

If one was to think of pure strategies with respect to the management of the aging of the developed world, one might take a cue from Adam Smith and work either on the labor force side to increase the supply of workers, or work on the productivity side to increase the skill, dexterity, and knowledge with which that labor is applied. If one was to work on the labor force side, the ideas that come in your head right off the bat are delayed retirement and pushing up the retirement age.

Perhaps there could be a modification of that—a system of partial retirements or phased retirements with income being supplied both from retirement funds and direct wage income. Another response could be immigration or increased participation in the work force of those currently underemployed. All would fit as labor market responses to one of Smith's assertions that great factors influence the wealth of nations. One could turn to the idea of increasing productivity by investment. There could be investment in plants and equipment, as well as skill, dexterity, judgment, research, training, and education. The hard facts are that what drives modern economies tends to be in this second category of research, training, and education. But even if we opted for this strategy, remember that there has to be a mechanism. It could be a political claim or perhaps an investment claim or sharing that increased productivity with the dependent older citizens. Or perhaps we could go with a mixed strategy. It's a language from decision theory, that is, to do both.

One can do both for the traditional actuarial diversification. It's a good thing to spread the risk, but there is a tendency in democracies to adopt mixed strategies. We seldom do things that are completely ideologically pure in democracies. It may well be our strength, and it is my basic proposition, that in confronting the aging of the developed world, that for the reasons given, diversification and the fact that it may well be inevitable in a democracy is the best strategy.

Before we start analyzing these strategies, we need some yardsticks. It is an axiom of management that what gets measured, tends to get managed. It is also a principal of modern management that good management relies upon good measurement. So if we're going to talk about big things, we must have some big measurements. I've called them macro meter sticks. These tend to get us with the rest of the world. When we start to think macro, we need to make some shifts. Most of us work with our individual plans or with our company plans. You must do several things when you start thinking macro.

The first thing you need to do, and it's the easiest, is shift the decimal point. Shift it a long way to the right so you can change your way of thinking. The reason you have to change your way of thinking is because, as individuals, our lifetime is finite. This nation has existed for 210 years under the constitution. I've been around for one third of that time and clearly my end draws near, but I believe the U.S. will exist for a long time. There is a difference between a nation and an individual.

There's also a difference between how open or closed the system is. Most of us, as individuals are assaulted both by opportunities and by disasters that force us to adapt and to change our plans. We manage in our own lives, and live very open lives. When you change to a nation, the system is not totally closed. It is less closed than it used to be because of the importance of international trade, but it is much more closed than it is for individuals. The store is as much a part of the nation as I am. You also have to change your viewpoint.

For example, the Federal Reserve is purported to look at this macro measure. I have never sat in on the open market committee. Should the growth rate of the gross domestic product be controlled such that it's roughly equal to the growth rate of productivity and the growth rate of the labor force. If the growth rate of the gross national product (GNP) is below that, the Federal Reserve Board can give the economy a shot. It's more than that. You better slow it down a bit. As a matter of fact, if they do that, I'm delighted because it shows that the Federal Reserve Board has been reading Adam Smith. Those are exactly the components he told us about: the growth of the work force and the increase in the skill, knowledge, and dexterity with which that work force applies it.

There are, of course, other micro indices. One dates back to the Carter years, where you add together the consumer price index (CPI), the growth rate of the CPI, and the unemployment rate (sometimes called the misery index). Notice that all of these macro measures both reveal and conceal. If you've been reading the newspaper recently, you have seen some of the difficulties in measuring consumer prices, both with respect to how you measure quality and changes in the market basket. You've also read about problems of measuring unemployment and measuring the intensity with which unemployed workers are seeking employment.

When you use micro yardsticks, you need to be aware of these measurement problems. Since most of you have been trained in applied statistics, you also will criticize these micro measures for the lack of interaction terms. For in fact, going back to the Fed's measure of increase in the work force and also increase in skill, dexterity, and knowledge that's productivity, but they don't necessarily add up quite that simply. For example, if we increase the work force, we may be bringing people into the work force who lack the needed skill, dexterity, and knowledge. Instead of adding them together, if we push one up, the other may go down. This is complicated business. Now we will return to this idea of micro meter sticks in a few moments, but we need a little bit more background before we start to analyze some of our options.

I titled this next section changing demographics in the republic. I suppose I should give a word of defense for even including it. We tend to be viewed by our publics as technicians, not as politicians. Why should we be concerned with the political aspects of the aging of the developed world? It is my proposition that we need to be concerned, mainly because we are citizens. We are part of the great republics; also, these great republics are to defend and create the institutions that we serve. The preservation of the republic is important to us. But what does the old-age crisis have to do with the republic? Republics survive with diffuse power. If you do not believe that, I urge you to read the *Federalist Papers* by John Jay, James Madison, and Alexander Hamilton.

Some of the papers almost worship the fact that the checks and balances, and the diversity of forces are our best guarantee of liberty. We have often, in the history of the U.S., and I'm sure in the history of other republics, had to adopt measures to prevent splits in which the interest of one group of the population was diametrically opposed to the other.

We created antitrust legislation to prevent concentration of economic power. We can think of education. We created a great public school system as an engine for economic development and social mobility. We created the great land grant universities, for the same purpose of promoting social mobility and promoting economic growth. When we were split in political power by race, we had constitutional amendments, enacted after the Civil War, as well as the great bills of the civil rights movement that increase participation in our government. The same thing happened with respect to the participation of women in government. It is important for the preservation of the republic that the interest of the elderly not be diametrically opposed to everybody else. A phased type of retirement, encouraging developing compensation systems and benefit systems to encourage the labor force participation of older workers will help to alleviate a split of the republic along age lines.

Now let's turn to our actuarial opportunities in conjunction with each of these two broad classes of strategies. What about the labor force response? That included the idea of phased retirement or later retirement.

What are some of the new opportunities available to us? Part of those opportunities might be called professional service opportunities. What I'm thinking of is helping with individual, financial planning. You say there's already an army of people out there doing it. Yes, there is, but there are some wrinkles. If this is an opportunity for actuaries, we must be aware of ethical implications of providing such advice. Bad things that happen to the sales forces of some major life insurance companies reinforced the reality of those ethical considerations.

One must also be aware of the fact that there are serious economic constraints. Joe and Jane Lunchbucket cannot afford a $200 an hour fee for financial planning. We have to develop new, efficient, and low-cost ways to help them. We also need to do a better job than we ever have in the past to help those people understand uncertainty; perhaps we can show this graphically, as in the Social Security charts with the widening lines, or with words. Maybe these words have not been invented yet. Or maybe we can teach probability, but we have to convey that sense of uncertainty.

We also want to go beyond simply asset allocation. If, as I stated earlier, the biggest driver of the economy today is more education and research, it may well be that the most important decision that many people make, is to invest in their own education. People need help in making that decision and in creating the financial resources to do it. There may also be new financial security products that we could help develop. I stress here that this is not simply relabeling products that we developed 210 years ago. There may be some new products that we will need to develop and learn how to use. These could be products that are related to the new world in which we live.

What am I talking about? The consulting firms that work in compensation planning may now want to work in productivity planning. Unless we match compensation more directly with productivity, as the work force ages, our cost will go up which will place us at a disadvantage in the rest of the competitive world. It may be necessary for us to develop various phased retirement systems and new types of employee benefits. It may be necessary for us to change the age discrimination laws, or at least the way they are interpreted, in order to make good use of older workers. The challenges of creating the work rules, the compensation, and the benefits for a labor force that uses older workers more effectively is a wonderful actuarial challenge. We have to recognize the realities that people will be saving not only for retirement, but perhaps also for middle aged education and the realities of labor turnover into the work force, new employment, new out for re-education.

In the multiple decrement models, we had two random variables, time until decrement and cause of decrement may be inadequate for the next generation. We might need multiple-staged stochastic processes moving from one stage to another and back again into work, into education, into partial work, into retirement, and maybe back to full-time work. The plans that we will be developing will require us to develop and use some fundamentally new mathematical models.

Now how about actuaries and the savings response? That was the second of the pure strategies that we had mentioned. In many ways, this is a traditional role for actuaries and in some ways things are going quite well because annuity income, by any historic standards, is enormous. The amount of assets tucked away to support pension liabilities is measured perhaps best in light years. Even the OASDI trust fund is increasing. The management of these programs has been done using traditional actuarial functions. However, I believe that it’s important for us to take a look at whether we would want to put all of our eggs in the savings basket. There are some precautions. Not that any of these precautions preclude the savings response, but they are the things that we need to think about.

Obviously inflation is one thing we need to think about. Inflation is a monetary phenomena, where you get a great deal of money and not as many goods and services. That’s what Adam Smith talked about. When you have a great deal of demand, but not enough workers to supply the demand, it’s an especially pertinent problem. When we talk about the aging of the developed world creating claims, based either on prior investments or political expectations, without talking about an increase in productivity, it can lead to inflation.

We also need to be concerned, as were our forefathers at the turn of the century, about the concentrations of economic power. I am pleased that the American Academy, in its response to the Social Security Advisory Council, did not go for the privatization option at this time. The concentration of economic power is a serious issue. If we, in fact, privatize that mass system, could we resist the political pressures to direct the investments? Will the capital markets, with their vaunted efficiency, remain that efficient? Would that creative tension that drives capitalism between owners and workers be enhanced or would it be hurt by this massive change? Going back 210 years, the constitution does have a clause in it about promoting the general welfare. I do not recall any clause about forcing savings.

Another precaution of opportunity in the savings response is foreign investments. We eluded to China a few moments ago. China has a different demographic profile in the developed world. In the future, when we plan investments, we will also be looking at the demographic profiles of other nations. We would want investments for diversification reasons in those nations that will be dissaving, at a different time than ourselves. If we go on the pure savings approach, we would also want to be concerned about whether those investments were only in physical goods or also research, education, and training. Those components of productivity side in the modern world that Smith listed. Actuaries have had a long and honorable history in social insurance. In order to understand social insurance, I ask you to look at some of those macro measures that we talked about before. This little theorem has attached to it the names of Paul Samuelson, Henry Aaron (not the baseball player, but the Brickens Economist) and Jim Hickman. The idea is that the key rates in thinking about Social Security are the annual rate of indifference between current and future consumption. Is it greater than, less than, or equal to the growth rate of real wages? That brings us back to Adam Smith again and the growth rate of the work force.

Of the first two, the sums, the bottom part are bigger, pay-as-you-go, social security increases general welfare. If it's the other way around, it decreases it. Of course, that's exactly what had happened in the post World War II years. We had a rapid growth of real wages and the rapid growth of the work force. It is no surprise that pay-as-you-go social security worked like a charm. Today, with the low growth rate of real wages and a low growth rate of the work force, it is no surprise that we have problems. I think we can expect, no matter what happens, a reduced role for pay-as-you-go or for Social Security of any type.

The conditions that have existed since World War II are perhaps unique. Do not expect the same dominant role in the next century for Social Security as existed in the last century. Social Security of course, will also have some generational equity issues. Those issues are very complex. Franklin Roosevelt said, “This generation has a rendezvous with destiny.” He was speaking of the World War II generation. We did. It is difficult to measure or to run a society and have complete equity between generations. As an historical aside, this issue interested Thomas Jefferson a great deal. With some considerable labor, he computed the life expectancy of a person aged 21. He computed it to be 19 years and stated that, no act by Congress, or even by the total people, should ever incur a debt or take an action that would last more than 19 years. Jefferson, unfortunately did not understand the difficulty that everyday that 19 turns over. He was silent about that important, practical problem.

My conclusion is basically that a mixed labor force and savings strategy are likely to be best for the developed world. These mixed strategies, in many ways, are already in place. You already have seen the painful downsizing of some companies to reduce cost and hopefully increase productivity. You’ve already seen, by looking at McDonald’s and elsewhere, the employment of older workers. It is a big challenge. It is our challenge also to, on the savings side, make sure that savings is accumulated and invested properly, to increase productivity. Do not be bemused by dollars alone. What really matters is productivity. You live in a great age. The actuarial opportunities just abound for your generation. You have both labor market responses and savings responses to master. You are part of this solution. Now I leave you with one word of advice: when opportunity knocks, do not say, “Who’s there?” The response is to open the door. That may be the grain of a developed world seeking your help.

Mr. Holland: Excellent presentation. Let’s say you’re the consulting actuary for the actuarial profession. What do you think that we can do as an organized professional body to best meet the challenges that you have just described?

Dr. Hickman: Dave, one of the first things that we could do, which we are doing right now is, revise our educational structure and realize that the institutions that us old timers served are going to change. The intellectual skills that are needed are going to change, and we have to develop an educational system that is based on foundations and to develop continuing education to help our members adapt to the changes. The idea that we can cover everything with the Fellowship examinations, or that you can last a working lifetime with the skills that you acquire while becoming an FSA is no longer true. So revising that educational structure and promoting continued education are the most important things that we can do.

Mr. Holland: Can you comment on the Society of Actuaries Foundation because you're very involved as a member of the Board of Trustees? What are some of the activities that the Foundation is involved with? It may be relevant to this discussion.

Dr. Hickman: I mentioned a research study that the Foundation is helping sponsor, along with both the Committee on Retirement Systems Research and the Committee on Life Insurance Research. Mike Sze is the project chairperson for the Impact of Mortality Improvement on Social Security: Canada, Mexico, and the U.S. project. They are collecting data from Mexico, Canada, and the U.S. They are going to recruit a group of experts in demography, like actuaries and biostatisticians to try to elicit their informed opinion about what's going to happen to future mortality. This will help us plan for the future. Now will that be the last story? Absolutely not. We have to be adaptable. The systems we design have to be adaptable, but this is one of the big research projects that the Foundation is working on that relates to the issues I brought up.

The Foundation is also working on aspects of the genetic revolution. I mention that only in passing with respect to the fact that if I had to bet, I would bet on marked mortality improvement, largely based on that scientific information. The Foundation and MetLife are supporting a symposium in June 1997 to bring together bioethicists, biostatisticians, actuaries, and medical directors to get a foundation on this topic. We also plan other research efforts. If you studied chemistry, you know the periodic table. This table is going to be bigger than the periodic table. It's going to have hundreds of thousands of entries, but it's going to be just as important in understanding biology as the periodic table is in understanding chemistry.

From the Floor: I'm not sure I understand your graphs entirely. Most people are going to retire from 1990 to 2030—the infamous baby boomers. You have many entitlement programs. Where do you draw the line? If you don't have very much, maybe you should be entitled to a program. Has anybody put forward the proposition that many of those people retiring in the next 40 years will have more than enough?

Dr. Hickman: The answer to the first part of your question is, yes. Many people have suggested that. The fact that Medicare and Social Security are not directly needs-related has been suggested. You asked a political question, so I'm going to give you a political answer. This is my opinion and not the SOA's. Means testing worries me because I have seen problems with the administration of income tax. I've seen problems with the administration of welfare systems, and I've seen problems in the administration of the Medicaid system (where the original intent has been thwarted by ingenious ways to avoid it). I hope that we do not create another bureaucracy for means testing. We already have such a bureaucracy and they could be better, as could all our institutions. I would prefer using one bureaucracy, the IRS, to take back money from people that have too much of it, rather than create another bureaucracy to test something that's very difficult to test, like means. I realize that's a political response.

From the Floor: It sounds like though, this Board of Means testing would best be administered by a group of actuaries with high ethics and a real understanding of wealth.

Dr. Hickman: I would not wish that on anyone.

Mr. Frederick W. Kilbourne: Jim thank you for one of the best lectures that I've heard in many years. I enjoyed it very much; it was very enlightening. I recall saying some years ago that the solution to our Social Security problem was to put old people to work.

From the Floor: The idea of phased retirement makes all the sense in the world, but is it not true that the progress in mortality has not been matched by progress in alleviating morbidity. It may be difficult to extract these extra work hours out of older people in sufficient quantity and quality to be able to balance our actuarial equation.

Dr. Hickman: That's a very good question Fred. The point that Fred makes is that we have not had a corresponding improvement in morbidity that parallels mortality. I would call your attention to two studies, Fred. One is a very recent study that came out of Duke University's demographic lab and it asserts that the contrary proposition is true. We have had a decrease in disability, at least at the early retirement ages. Also a man named Rich Burkhouser at Syracuse University has published a recent study supporting, from a different data source, basically the same proposition. Burkhouser believes that we could push retirement ages that are scheduled to go to age 67 even further without having a big increase in the number of disabled. His view is that when he looks at those that retire for disability and those that retire for other economic purposes, he doesn't see that much difference in them. So I think that the most current evidence is that we could probably push it up without increasing disability that much, but it is important for us old guys that do have trouble standing up, to change the work rules and the compensation to be commensurate with what we can do. Us old timers still can contribute and we should contribute.

Ms. Joan P. Ogden: There's much discussion about what we must do; what must we not do?

Dr. Hickman: Joan, the thing that we must not do is to continue to give away degrees of freedom. With every day and every year that goes by, the opportunity to change the political and economic expectations decreases. We begin to tie our hands slowly but surely. Time is the most valuable resource, both to us as individuals and to us as a nation. It is important that you and I, as individuals, get out there and keep this discussion going. The hard facts are that the degrees of freedom with respect to the Medicare "solution" are very few indeed. There are very few years before major changes will be required to maintain almost anything. Thank goodness the cash income side shows that we do have some more years. The biggest mistake that we could make is to delay any further serious political discussions of these issues. Those discussions should start, in my view, with the *Federalist Papers*. What is the proper role for the federal government? I am willing to take a different definition than Madison, Hamilton, and Jay, but I want to start there. We then need to talk about both the economic and social implications. Do not let this die. Do not let us go with simply temporary solutions. We have the public's attention. This is an important problem, so let's get it discussed.

From the Floor: You mentioned, in your answer, degrees of freedom. I was struck, during your presentation, by that phrase and by the idea of developing new indices. I think the example of the misery index that you pointed out changed the political environment and got people's attention as an entirely new index that has not been mentioned before. With the idea of the degrees of freedom, is there a measurement that you would suggest that you've come across? Do you have any ideas on the idea of developing an index, perhaps a freedom index?

Dr. Hickman: Marvelous question, but the answer is, I don't know how to do it. Obviously the phrase, degrees of freedom came up because, as Dave mentioned, my doctorate degree is in statistics. I do not know how to measure it. There have been, of course, international efforts on the human rights level, to see how this nation and other nations rate on direct human rights violations. I would not want to accept the responsibility of coming up with a measurement of freedom in the next 18 months. It is part of every decision that we make politically. It is part of every decision that we make as individuals. I'm not sure that I can aggregate over a nation of 260 million people. I don't know how to do it.

From the Floor: You were talking about advanced funding by an individual or by the nation, and you said we have to shift our way of thinking if we're talking about an individual or the entire nation.

Dr. Hickman: Right.

From the Floor: Then you made remarks that seem to me to suggest that complete advance funding for an entire nation would not be good. Then you talked about the effect on capital markets, the legal pressure or Congressional pressure to use those funds in certain ways, which is different from a pure investment for retirement question. You said that, in effect, complete advance funding for the nation would change the nature of everything. My question is, does it really matter if I want to save, in advance, enough to retire? What difference does it make? It seems like, to the extent possible, we should save for our own retirement, not depend on some future generation, or even two or three generations hence, to pay for our retirement. So can you say something about that?

Dr. Hickman: You're right, but the key point in your comments has to do with the word voluntary. The answer is that if each of us voluntarily wanted to diversify our investments both here and abroad, and invested in our own education and development, we have every right in the world to do it. I need to be persuaded because of my roots in Madison. I take Jay Madison very seriously. He said that the federal government is the proper agency for compelling a defined-contribution pension plan. I understand the general welfare. I have paid taxes all of my life. It is providing the general welfare certain floors, and it is a legitimate function of government. I need to be persuaded that a compulsory defined-contribution plan is in keeping with the *Federalist Papers*.

Mr. Bruce D. Schobel: I'd just like to make two comments—one pertaining to the comment about savings and the other pertaining to retirement age. First, let's discuss savings of individuals versus nations. I think that it's possibly instructive to discuss commuting into New York City. I don't like to commute into New York City with millions and millions of other people. So instead of taking the train at 8:30 a.m. like almost everybody else does, I take the train at 5:30 a.m. when it's not very crowded. I can walk on the sidewalks without getting bumped into the street and run over by taxis. However, if everybody said that they were going to take the train at 5:30, then it wouldn't work. We would all be in the same crowds that now exist at 8:30, and I think we may have the same situation with savings. I think that what will work for an individual may not work for the whole society, because there isn't really one place to put all the money without driving down rates of return.

The other point I'd like to talk about is retirement. I'd just like to make the observation that even though Social Security's normal retirement age goes up by two years for people born after 1959, they have kept the early retirement age the same, 62. People who retire at age 62 simply receive a smaller benefit because they have five years of actuarial reduction, rather than three. I think that while we might all agree that getting people to work longer would improve the ratio of workers to beneficiaries, you can probably see people voting with their feet and leaving the labor force as early as they can. While that may have bottomed out in very recent years and there is some evidence in that direction, I just don't like to see us falling into the trap of college professors, like Rich Burkhouser and actuaries like us sitting around telling all these other guys they should work longer. We might not have jobs like the average American has and there might be some underlying reality behind the data that people are retiring earlier. There might be a good reason for that. I'm not sure how that's going to change in the future. What we may see is people continuing to retire as early as they do today and simply receiving less adequate benefits.

Mr. Holland: I agree with you Bruce, and I think one of the challenges for us is to help the change in work rules and work practices. We must make an effort at it.

From the Floor: Regarding privatization of Social Security, there are those who argue that this approach is a viable one and they often site the experience in Chile where they feel it has been successful, both from a financial standpoint and from a public acceptance standpoint. Can you comment briefly on your thoughts relative to the experience in Chile?

Dr. Hickman: Keeping with Dave's fast track, that deserves a full paper. The important point is that the U.S. is not Chile. It does not have the same kind of government as Chile. It did not start from the same place. Your premise is correct. It has, in some way, contributed a remarkable economic growth in Chile. How much it contributed is a technical issue, but it has worked.

From the Floor: We heard disability versus work mentioned. If we think about the gradual aging of individuals, there have been many situations where people need help with one or more functions of daily life, to the point where they need total care. In the beginning they might need help going to the grocery store, for example. There's no overall organized system to provide that kind of help and/or to finance it. Medicaid finances about half of long-term care, which is likely to be cut. I wonder if you have comments about the opportunities for actuaries to find solutions to these issues?

Dr. Hickman: I think the answer to that question is self-evident. There are enormous opportunities. The idea of activities of daily living is a great idea. People at 65, by and large, can still mow the yard, do the laundry, and go to the grocery store. At 85, they, by and large, have lost some of those abilities. I would like to see pension systems be less like saving systems and more like insurance systems, where the amount of payment is a function of the activities of the daily living lost, rather than front-end pension income. I want to back end it where you really have to but all of those services. That is particularly true for the current generation because there are smaller families and the ravages of divorce means there are less family caregivers and less family managers. So creating financial savings products or financial security products that are more tied to providing activities of daily living and perhaps some of those management services is one of the opportunities of the future.