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## FUTURES RESEARCH AND THE 1980'S

Speaker: JAMES O'TOOLE\*

MR. GARY CORBETT: Before introducing our speaker I'd like to take a few minutes to discuss the over-all structure and intent of this meeting.

A few words on "Futurism" and "Futuristic Thinking" as applies to the actuarial profession. In a sense, actuaries have always thought futuristically since we are generally concerned with future contingent events. However, our work in the past has not generally been characterized by truly "Futuristic" thinking. We tend to be logical, left-brain thinkers, and even when we have employed multiple scenarios, we have varied only those elements, such as mortality and interest rates, directly related to the problem being studied. And generally the variations are merely pessimistic, best estimate and optimistic extrapolations.

All too frequently, our so called futures work has not attempted to determine the impact of broad societal and environmental trends on the variables being studied. And, even when the economic and demographic environments have been taken into account, the approach has tended to be traditional - certainly not characterized by "parachute jumps" into the future that would provide for significant discontinuities in the environment. For example, how many of us, five years ago, looked at the impact on our business of 15% long-term interest rates? I certainly did not.

To study the future, you must study what today seems improbable. You must immerse yourself in a particular environment and attempt to project how you and others would operate if that environment did exist. You must suspend disbelief and feel yourself within that environment. This is what our three executives in General Session 2 will do and what we encourage you to do throughout the meeting.

Don't worry too much about the details of the scenarios - different items will appeal to different people and specifics could be debated - but feel the environments, one at a time. Don't concern yourself with the probabilities of their coming to pass. Whether you like them or not is not important. They are possible futures. If there are other scenarios which you believe have some reasonable chance of coming to pass write them up when you get home and attempt to construct appropriate strategies for them.

Our hope is that a meeting Perspective based on the three scenarios will encourage futuristic thinking, not only this morning, but also at the Concurrent Sessions and Workshops that will follow.

That's the reason for the scenario approach. The next question is "How were they developed?" The decision to employ three scenarios, and the basic

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orientation of each, was decided by the Committee. Then I was assigned the task of producing the scenarios and obtaining a lead-off speaker. There were a number of possibilities but my first choice for a key-note speaker, who I knew could also help with the scenarios, was Professor James O'Toole of the Center for Futures Research at the University of Southern California. I had heard Jim speak at a Workshop I attended at the Center and, more important, I was familiar with the study that Jim had led on the Future of Government/Corporate Relations. This was the first Futures study that I had seen that addressed itself to an area of direct significance to the life insurance industry as opposed to the more typical technology-oriented studies. I was impressed that Jim and his associates were able to take an essentially soft area, dealing with attitudes and perceptions, and develop some relatively hard data that led to reasonable predictions for the environment we'd probably be operating in by the late 1980's. For any of you who are interested, this study was reported on in the March-April 1979 issue of the Harvard Business Review under the title "What's Ahead for the Business/Government Relationship?"

In addition to having published six books and numerous magazine and journal articles, Mr. O'Toole has addressed many major organizations. His primary professional interests are public policy analysis, human resources development, government/corporate relations and futures research.

In his address this morning Jim will discuss the importance of Futures Research to the actuarial profession and employ his scenarios to look forward to the years ahead and what they might hold for the insurance industry.

In the panel that follows the break, three senior life insurance executives will describe the possible responses of life insurance companies to the three different environments described in the scenarios. Following the panel there will be an opportunity for comments and questions directed to Professor O'Toole and to the three panelists.

Now to discuss the subject of Futures Research and what the 1980's might have in store for our profession and our companies, I present to you Mr. James O'Toole.

MR. JAMES O'TOOLE: 1980 marks the tenth anniversary of the publication of Alvin Toffler's six-million-copy bestseller, Future Shock. Recall the book's disquieting forecast in 1970: Americans would soon suffer stress and disorientation because they were experiencing too much change in too short a time. Then, as if life imitated literature, the unsettling events of the next decade bore-out Toffler's prediction. As the following review of the headlines of the 1970's illustrates, Americans received shock after shock with dizzying frequency in what can only be called a tumultuous decade:

- 1970: Student Rioting and Shootings at Kent State; Campus Unrest Across the Nation
- 1971: U.S. Dollar Officially Devalued
- 1972: Watergate Break-in
- 1973: U.S. Vice-President Resigns, Arab Oil Embargo
- 1974: U.S. President Resigns
- 1975: Unemployment Reaches 9.2% (highest in 35 years)

- 1976: Corporate Bribery and Illegal Campaign Contribution Scandals;  
N.Y. City Faced with Financial Bankruptcy
- 1977: Korean Influence-Buying on Capitol Hill
- 1978: Dollar Falls in Value Against European and Japanese Currencies
- 1979: Double-Digit Inflation; Shah of Iran Deposed

Remarkably, during these ten years in which everything seemed to be falling (e.g., the value of the dollar, U.S. exports, and public confidence in social institutions), the economic performance of U.S. corporations stood out as a conspicuous bright spot. Major corporations were able to weather the storms raging about them and produce a real increase in profits for the decade as a whole. In general, the Fortune "500" companies increased production, held employment steady and invested in new products and technologies throughout the roller coaster decade.

One of the secrets of their success may well have been that, as the shocking decade wore on, corporations became more and more sophisticated in managing their strategies and policies in an uncertain environment. Because of their constantly-improving ability to anticipate future developments - and their proactive adjustments to untoward government policies - corporations were able to maintain a relatively even keel in a turbulent social/economic/political environment.

Now as a new decade begins, corporations are actively analyzing what the 1980's might portend in the way of surprises, new threats to overcome and, most important, opportunities to seize. Of course, no corporate manager possesses a crystal ball. The only thing known with certainty about the future is that it cannot be predicted. Who in 1970, for example, could have predicted the calamitous events listed above? (In hindsight, even the redoubtable Mr. Toffler anticipated none of these events; indeed, he also missed what arguably was the most significant development of the decade - women's liberation - the seeds of which had already sprouted while the script of Future Shock was still in his typewriter). Thus, the unpredictability of the last decade should cause forecasters to proceed with humility when speculating about the future. For as Mark Twain recognized, "In the space of one hundred and seventy six years the lower Mississippi has shortened itself 242 miles. That is an average of a trifle over one mile and a third per year. Therefore, any calm person who is not blind or idiotic, can see that in the Oolitic Silurian Period, just a million years ago next November, the Lower Mississippi River was upward of one million three hundred thousand miles long. By the same token any person can see that seven hundred and forty-two years from now the Lower Mississippi will be only a mile and three quarters long. There is something fascinating about science. One gets such wholesale returns of conjecture out of such a trifling investment of fact." The pitfalls of forecasting are many (and potentially embarrassing).

Nevertheless, corporations are forced to think about the future.

#### WHY CORPORATIONS ARE CONCERNED ABOUT THE FUTURE

The future will not be like the present. The anvil maker of the 1840's could assume that the market for his product would remain unchanged throughout his career. Since, come what may, horses would need to be shod in the future, blacksmiths would therefore need anvils. But what corporation in the 1980's can assume an unchanged market for its products even two years in the future?

The turbulence of the times increases risks and uncertainties. A multi-million dollar investment can be made obsolete with the introduction of a new technology (as manufacturers of adding machines have been discovering since pocket calculators have come on the market) or with the announcement of a new regulatory decision (as Monsanto discovered when its disposable soft drink bottles were banned).

Longer lead times are needed for implementation. To plan, build and man a new plant today can take as long as half a decade. This lead time is constantly increasing because of more complex technologies and more complex state and local environmental and zoning regulations that must be cleared.

The stakes are higher today. Whereas Henry Ford could capitalize his motor company for \$100,000 in 1903, today just the marketing costs of a new consumer product can be twenty times that amount.

Today's actions determine the future. Current decisions (and indecisions) shape the opportunities and options corporations will have in the future. For example, oil companies who invested heavily in the Alaskan North Slope oil fields a decade ago today have the cash flow needed to develop new energy sources.

Companies can influence their own futures. While companies are seldom free to create the future they desire, they often can influence it (as the Business Roundtable has demonstrated) and almost always can adapt themselves to conditions that are likely to prevail.

For one thing, such future-oriented activities as imaging products that do not yet exist, anticipating market demand, and creating a niche for a new good or service, are the very essence of the entrepreneurial behavior that marks the difference between success and failure in business. Moreover, because corporations are charged with the stewardship of their shareholder's investments, their employees' jobs and their customers' welfare, they have a unique responsibility to posture themselves to best absorb whatever unavoidable blows misfortune might bring, and to anticipate the opportunities that frequently present themselves as silver linings accompanying the clouds of change.

As corporations enter the 1980's, they are far better-equipped to anticipate and cope with emerging issues than they were in 1970. In fact, thanks to Toffler, Herman Kahn, Daniel Bell and other scholars in the emerging field known as "futures research", thinking about the future is no longer an act of pure speculation.

#### TECHNIQUES FOR STUDYING THE FUTURE

While futures research is not a science (and, because human behavior is not predetermined, never can be a science), the field has nevertheless abandoned its earlier unprofessional science-fiction approach and adopted structure and discipline from such related fields as operations research, demographics, econometrics, mathematical probability theory and public policy analysis.

Recognizing that the future cannot be predicted, scholars have developed orderly and systematic processes for analyzing alternative futures. One such future - the nominal future - is the best guess of experts of how things will develop if there are no surprises. Such forecasts are typically obtained by the way of so-called Delphi studies. (The process was developed in the 1950's at the Rand Corporation.) In a Delphi, a panel of experts is asked to respond

anonymously and in numerical terms to a series of questions (e.g., "By what year will the U.S. be getting electricity from nuclear fusion?"), and to offer reasons for their estimates. The results are collected and fed back to the panelists. The panelists are then asked to review their own estimates in light of the responses of the other experts. The process is repeated for several rounds until, typically, the spread of opinion is substantially reduced. The median estimate of the last round is accepted as the consensus forecast of the experts, or the surprise-free "nominal future".

But, as everyone knows, it is the surprises that get planners every time. What is called for, then, is a technique that allows one to play a systematic "if what? game" (e.g., "If there is another Three-Mile Island-type accident, what will the government's response be in terms of funding further nuclear research?"). The most sophisticated of such techniques is "interactive cross-impact gaming", developed by Selwyn Enzer of the University of Southern California's Center for Futures Research. Less forbidding than it sounds, the technique is actually a computer model that replicates the three basic ways change occurs in the real world. First, there is a part of the model that lets trends develop in the most likely or nominal way (e.g., the government will spend \$1 billion on fusion research over the next two decades). Second, there is a part of the model that allows surprises to occur (e.g., it would simulate the effects on the society, polity and economy of a major nuclear accident). When such events occur, they alter the predicted course of events in the first part of the model (e.g., the government would respond by greatly reducing funds for nuclear research). The third part of the model consist of human responses to what is going on in the other two parts of the model. To do this, teams of corporate planners play the roles of key stakeholder groups (e.g., the Congress and environmental lobbyists), and adjust the policies of these groups to meet the contingencies created by the developments being simulated. The model thus allows for a year-by-year interplay of events, trends and policies that - while consciously not predicting the future - helps corporate planners to develop alternative strategies for adjusting to change in their operating environment.

In preparing this paper, I have drawn heavily on the results of the Interax project by my colleagues Selwyn Enzer and Richard Drobnick at the University of Southern California's Center for Futures Research. This project, sponsored by twelve of the nation's largest corporations, seeks developments that could have significant impact on American corporations in the future. Let's take a quick look at some of those developments:

#### The Maturing of the Boom Babies

A very few things are known about the future with a certainty approaching scientific fact. The foremost of these "facts" about the 1980's is that the post-World War II generation of "Boom Babies" will come to constitute a third of the entire U.S. workforce by mid-decade, and will reach "middle age" before the decade is out. Of the babies born in the boom years, 1945-1955, the oldest started to enter the workforce in 1960. Between 1960 and 1976, the number of young people aged 15-24 in the workforce increased by a phenomenal 100%. The percentages are impressive, but the raw numbers involved are staggering: for example, in 1975 there were 40 million workers in the 25-45 age category; by 1990, there will be 60 million. To complete this story, if we follow this cohort until their hairs gray, we find that their numbers will have advanced the median age of the entire workforce to 35 in the year 2000, up from 28 in 1970.

In fact, for the next four decades people over 65 will be the fastest growing "minority" group in the nation. As a percentage of the total population, only 4% of Americans were over 65 in 1900; in 1975, they constituted 10%; by 1985, they will represent 15%; and, by 2030, fully 22% of all Americans will be "senior citizens". As Peter Drucker writes: "The most obvious practical consequence of this change is that we cannot maintain mandatory retirement at age 65 and finance ... Social Security or private pensions. In 1935, when Social Security was first enacted, there were nine Americans at work for every American over 65 .... By 1985, (this dependency) ratio will be three to one.

In addition to this threat to the economy, the decades-long "graying of America" also presents some significant business opportunities in such fields as travel, pharmaceuticals and other products and services for the elderly. Moreover, demographic shifts presage important changes in values, life styles, family structure and work habits - all of which have important ramifications for corporate planning. For example, pollster Daniel Yankelovich has found marked differences between the social values of the post-War Boom Babies and the values of their parents (most of whom were youngsters or adolescents during the Depression). Unlike their parents, the Boom Babies grew up in an era of unprecedented affluence. Significantly, they were at impressionable ages during the decade of future shock; they witnessed first hand the painful struggles of minorities and women to restructure centuries-old social patterns and, more excruciating, they were on the front-line during the Vietnam protests. Consequently, Yankelovich finds that the brightest stars in the Boom Babies' heaven of values are flexibility, choice, change, options, variety and diversity (unlike their parents who, as the result of the trauma of the Depression, value security and order). While some of their values seem to be changing slightly as the Boom Babies mature, most are persisting and some even appear to be spreading to other generations. In particular, the values are beginning to manifest themselves in the following domains:

The Family. Today, over 20% of U.S. households contain only one person (which represents a doubling over the last two decades). During the same period, the number of divorces increased by 250%, and the number of children involved in divorces increased by about 333%. While these changes were occurring, the rate of female participation in the workforce increased from 33% to 47%. As a consequence of such trends, the majority of American children now live in a home in which both parents work, or in which the only parent present works. The "typical" American family, with Dad the breadwinner and Mom the homemaker, thus may become an "endangered species" in the 1980's.

Socially, it is too early to evaluate the impact of these trends on the generation of American youth born in the 1970's. Economically, however, the impact has been tremendous: there has been a rapid increase in demand for convenience products for working women who have little time to shop, and in demand for personal services for single people; there has been a corresponding drop in demand for large houses and the goods and appliances to put in them; and there has been a reduction in demand for products and services for babies and young children. Since these trends are likely to intensify, "small is beautiful" may become the watchword for consumer products in the 1980's.

Life Styles. The social critic, Christopher Lasch, has recently characterized the life styles of the Boom Babies as "self-centered", the evidence for which abounds in such aspects of the "self-awareness movement" as *est*, massage, jogging, health foods and meditation. Relatedly, there is a growing demand among members of this generation for more leisure time. University of Michigan

researchers have found that one-half of employed Americans want more flexible work schedules and more time off work for leisure activities. In a separate study, the U.S. Department of Labor found that 70% of employed Americans would be willing to give up some income for longer vacations or the opportunity to take sabbaticals.

While not all aspects of the new life styles can be viewed with equanimity from the perspectives of employers or of the public interest, these social changes are clearly creating new markets for products offering self-expression, physical fitness, entertainment and travel.

Work Habits. Journalist Caroline Bird has recently described the effect of emerging family forms on the work habits of the Boom Babies. Because the majority of these young workers have two-career marriages (and no children), one partner is usually free to quit his or her job without a severe consequent drop in the family standard of living. According to Bird, this leads to an erosion of loyalty and commitment to employers. Indeed, in two-career marriages, money is not much of a work motivator; for example, a pay raise means only half as much as it does in a one-career marriage.

These same young workers, of course, are better educated than any age cohort in history. In 1947, only 33% of students completed high school; today, about 80% graduate. In 1950, the median educational attainment of the workforce was 9.3 years; today it is 12.4 years. But the most dramatic changes have occurred in higher education. In 1950, only 6% of workers over age 25 had a college education; by 1977, the figure was 15%, and among the Baby Boom generation the figure was 24%. Looked at another way, the U.S. produced 400,000 new Baccalaureates a year in 1950, and double that amount in 1977. The number of Ph.D.s increased six-fold over the same time frame.

While America is justifiably proud of these accomplishments in expanding educational opportunities, the future job prospects of its better-educated workers may not be all that rosy. According to the U.S. Department of Labor, the number of college graduates entering the labor force will exceed job openings in professional and managerial categories by about 2.7 million over the next decade. In short, 2-1/2 college graduates will be competing for every choice job.

As the following table shows, the Department of Labor expects the percentage of professional and managerial workers to shrink in the total workforce, while the percentage of clerical and services workers will grow markedly:

EMPLOYED PERSONS, BY OCCUPATION,  
AS PERCENTAGE OF TOTAL EMPLOYED

	1950	1975	1985
Professional/Technical	8.0	15.7	15.1
Managers	11.6	11.4	10.8
(Self-employed)	(4.4)	(2.2)	--
Clerical	13.8	18.0	19.2
(Secretaries/Typists)	(2.6)	(5.3)	--
Skilled	13.7	13.4	13.2
Semi-Skilled	20.6	14.6	15.0
Unskilled	5.0	4.5	4.6
Services (Not Household)	6.9	11.4	14.2

These shifts have not been occurring in isolation. Concomitant have been the advent of affirmative action, the end of compulsory retirement, and the general slowing of growth in the economy. All these factors have increased the competition among educated workers for the most desirable jobs.

Significantly, while the Boom Babies' opportunities for good jobs seem to be relatively diminishing, their expectations for good jobs are expanding rapidly. For example, a vast majority of high school seniors aspire to professional, technical or managerial jobs, while only 27% of the total number of jobs available fall in those choice categories. Most strikingly, young Americans seem to feel that they have a right to realize these expectations. Yankelovich has identified a "psychology of entitlement", or a rising rights-consciousness in America, particularly among young workers. Things that were once privileges to be earned, are today assumed to be the right of a citizen, or a right that adheres automatically to employment. In this latter category are a host of new "rights" including health care, vested pensions, maternity benefits and educational tuition remission. Significantly, the domain of rights is being extended beyond fringe benefits. Yankelovich found, for example, that 53% of young workers feel they are entitled to participate in decision making on the job. In addition, Yankelovich finds that 68% of young workers are looking for jobs on which they can "express themselves", and 77% are looking for challenge on the job.

Thus, the future may be rocky for the Boom Babies as they face fierce competition for the few jobs that meet their expectations. One possibility is that they might attempt to push their elders into earlier retirement to create more opportunities for themselves - a move, as Drucker warns, that would be impossible for the nation to finance.

Turning to perhaps more tangible (but equally unpredictable) areas of future concern, major developments can be expected in medical science, technology and energy during the coming decade.

Medical Science. In no field is there greater opportunity for meaningful breakthroughs in the next decade than in medical science. Most significantly, the 1980's promise a continuation of progress in the battle against cancer, particularly in the area of anti-cancer drugs where major breakthroughs seem most likely.

Towards the end of the decade, major bio-medical breakthroughs are likely as the result of current developments in the way bio-medical research is being undertaken. Traditionally, major new drugs have come about as the result of constructing molecules in the laboratory and then finding pharmaceutical applications for these synthetic substances through experimentation. Recently, however, scientists have been discovering naturally-occurring substances that act on the body in beneficial ways. Because these substances can be reproduced in the laboratory, this promises the future development not only of drugs that work more directly on a specific problem, but also drugs that are less-likely to have untoward side-effects. The first applications of these new natural substances are likely to be with interferons, which are analgesics and immunological substances that the body summons when there is an assault on the physiology. Such natural substances include the proteins called endorphins, which are analgesics that seem to act on the central nervous system, and prostiglandins, which are like fatty acids.

Another developing area of bio-medical research is so-called pro-drugs, substances in which the molecular structure is modified to permit slow, constant and



uniform release in the body. Relatedly, where the same affect is desired, experiments are being undertaken with altering drug delivery systems (for example, in the treatment of glaucoma, instead of inefficiently and ineffectively applying a drug to the eye in the form of drops 4 to 5 times a day, it may be possible to implant the drug in a lens to the upper eye and leave it in place for as long as a week).

Not surprisingly, government actions are likely to have a profound impact on the pharmaceutical industry during the 1980's. For example, in 1983 the State of California will conclude a five-year pilot program that allows non-physicians to prescribe certain drugs. If this experiment proves successful, the entire drug industry would be affected if nurses, physicians' assistants and pharmacists were to be licensed to prescribe medicines.

In the longer-term, the most significant development in health care could be the trend towards preventive medicine. This slow shift in emphasis is best illustrated by the ten-year thrust of the Robert Wood Johnson Foundation toward the support of preventative health care activities and away from support for research for the treatment of acute illness. Other medical developments that could occur before 1990 include:

- \* The use of lasers to control gastrointestinal bleeding
- \* An artificial pancreas
- \* Effective, synthetic skin for burn patients
- \* Antiviral drugs
- \* The ability to immediately monitor the level of drugs in the blood of patients
- \* A medical cure for alcoholism that would eliminate addiction
- \* A cure for obesity that would allow permanent weight loss without patient discomfort or constant doctor care
- \* The capability of determining the sex of babies
- \* Control of the aging process that would increase average life span by five years
- \* Vaccines that would prevent most remaining infectious diseases (e.g., V.D.)
- \* An electrocardiogram belt that would automatically summon help in the event of a heart attack
- \* The ability to selectively overcome or enhance the body's immune response mechanism that would facilitate transplants and the effectiveness of chemical therapy.

Technology. The next decade undoubtedly will see further applications of micro-processors (tiny computers) to almost every common industrial and domestic machine.

The trend in computer technology of an approximate 100-fold minituration every five years seems destined to continue throughout the 1980's. According to a recent Time cover story, such breakthroughs as "bubble technology" and cryogenics (working at near absolute zero temperatures where there is no resistance to electricity) promise further increases in mass, high-volume storage of information. This means that we can soon expect to find mini-computers in almost all home appliances and in all machines found in the office and industry. As a result, the long-predicted age of robotics will finally have arrived. For example, computers are likely to be married to telecommunications technology, allowing people to work, shop, take college courses and be examined by a doctor - all while never leaving home. Scientists and engineers are

also at work on the following inventions, several of which have a good probability of achieving commercial application in the next ten years.

- \* Robots that would mine scarce minerals (e.g., bauxite, chrome, nickel) from under the ocean floor
- \* An automatic typewriter that would take dictation directly from the human voice
- \* An automated "travel agent" that would permit individuals to get their own reservations and tickets for planes, hotels and shows
- \* Improvements in varieties of grain that would increase yields per acre by at least 10%
- \* Improvements in aquaculture that would permit extensive production of inexpensive fish and currently-diminishing shellfish (e.g., clams, crabs, lobsters and oysters)
- \* Electronic mail that would allow an addressee to obtain a letter from an "automated postal clerk"

Energy. Nothing will be of as much immediate and direct importance to the economy of the 1980's as the price and availability of energy. The growing dependence on imported oil (\$42 billion in 1978) has contributed to double-

#### U.S. Oil Imports

	<u>millions of barrels per day</u>	<u>Percent of total U.S. oil consumption</u>
1969	3.2	22.4
1971	3.9	25.8
1973	6.3	36.1
1975	6.1	36.8
1977	8.7	47.0
1979	9.0 (projected)	50.0 (projected)

digit inflation, the declining value of the dollar, and to enormous trade deficits. While most experts feel that the energy situation will worsen in the near future, they nonetheless hold out some hope for finishing the decade on a somewhat brighter note, but only if several of the following developments occur:

- \* Greatly increased conservation efforts
- \* Mideast peace
- \* OPEC collapses
- \* Mexican oil reserves prove as large as Saudi Arabia's
- \* U.S. offshore oil and natural gas deposits prove as large as the Texas/Oklahoma fields
- \* U.S. oil reserves increase dramatically from improved secondary and tertiary recovery techniques
- \* Synthetic oil from coal, shale, and tar sands proves cheaper and environmentally-less-damaging than present technologies indicate
- \* An auto engine is marketed that reduces gas consumption by 50% relative to 1979 autos
- \* Electricity is produced from commercially-viable nuclear fusion

- \* Direct conversion of solar energy into electricity
- \* A super battery is marketed with ten times the energy/density of current batteries
- \* Efficient use of winds, tides, ocean thermal gradients, brine pools, biomass (including kelp and wood by-products) or other non-petroleum sources of energy

Government/Corporate Relations. Certainly, the most profound single influence on the nation's energy future will be the policies and programs that will emanate from Washington. Indeed, in general, the rules and regulations legislated by Congress and promulgated by federal agencies will have the single greatest impact on the ability of U.S. corporations to provide the goods and services demanded by Americans in the 1980's. In this regard, corporations absorbed shock after shock from Washington in the 1970's, particularly from such new agencies as the Environmental Protection Agency (EPA), the Consumer Product Safety Commission (CPSC), the Occupational Safety and Health Administration (OSHA), the Equal Employment Opportunity Commission (EEOC), and the newly invigorated Food and Drug Administration (FDA). All told, the typical corporation is directly regulated by some thirty such agencies who, unfortunately, often issue contradictory commands and controls.

While most regulatory activity is necessary to insure the quality of life in America, two major regulatory trends that developed in the 1970's seem only to cause inefficiency, social overhead, red tape and inflation without offering real benefits to American citizens. The first of these untoward regulatory developments was a shift from traditional specific purpose, single industry agencies (for example, the Federal Aviation Administration) to broadly mandated, multi-purpose, single industry agencies (for example, EPA and OSHA). The charters of these new agencies are almost boundless, the scope of their powers nearly unlimited and, because their missions are unclear, their actions are often arbitrary. Typically, these new agencies have sought to supplant the natural regulatory effects of market competition with highly detailed regulations that are seldom based on reliable scientific research (for example, before a national backlash set in, OSHA issued 4,400 highly specific, quantitative regulations detailing such minutiae as specifications for toilet seats). Ironically, such inflexible regulation by the numbers too often makes it impossible for corporations to adopt technologies that would provide the clean environment and safe products that were the original reasons for creating these new agencies.

The second unfortunate development was the introduction of the goal of "zero risk". In effect, this means that water not only has to be clean enough to drink and swim in, it has to be 100% free of pollutants - a state that seldom occurs in nature. What is significant about the goal of zero risk is its cost. Economists have convincingly demonstrated that the marginal cost of reducing risk increases exponentially as the zero state is approached. For example, it might cost one million dollars to make the water coming out of a factory 98% pure, but the next incremental percent of cleanliness might well cost an additional two or three million dollars, and the last one percent (if technically achievable) could cost ten million dollars or more.

The clearest application of zero risk is the famous Delaney clause that requires the banning of any substance that is found to produce cancer in humans or animals. (Saccharine was recently banned under the authority of the Delaney clause.) Unfortunately, unrealistically massive injections of many common substances will cause cancer in laboratory animals. Thus, useful (and even life-saving) products that common sense tells us are safe in moderation are nevertheless banned. In sum, the legislation establishing these new agencies does not require any cost benefit analyses of the regulations they issue.

The cost to American consumers of inappropriate regulation is problematic. According to the Dow Chemical Company, 41% of the costs of the regulation imposed on Dow in 1975 was "questionable or excessive," amounting to \$60 million in additional expenses passed on to that company's customers. A study of 48 corporations shows that the costs of regulation amounted to an average of 16% of after tax profits in 1978-79. And, according to a reputable economist, the net effect of excessive regulatory activity is that the U.S. economy operates 6% to 7% below its optimal capacity. In addition, effects of regulation on the day to day managing of corporations became enormous during the 1970's. According to the Conference Board, top executives now spend 40% to 60% of their time on social issues external to the operation of their companies. One witty C.E.O. even has been driven to remark that the new goal of his company is to "achieve earnings five times our legal costs!"

While it is impossible to forecast what regulatory conditions are likely to prevail in the next decade, it is nevertheless possible to state a few developments in government corporate relations that, were they to occur, would greatly improve the efficiency of the economy, reduce inflation, and create jobs:

- \* In the 1980's, the adversarial relationship of government to business progresses to one of cooperation. In other words, the U.S. government would discover that in order for U.S. products to compete against those made in Japan, Germany and Scandanavia, it will be necessary to support domestic industries rather than hinder their ability to compete at home and abroad. This is especially the case because governments in these countries are now actively supporting their domestic industries to improve their competitive position against U.S. industries.
- \* In the 1980's, the U.S. government changes its role from detailed regulator to that of a goal setter, leaving industry with the flexibility regarding how and when to meet those goals. An example of a policy consistent with this posture would be for government to tax industrial pollutants instead of issuing rigid, arbitrary standards.
- \* All environmental, drug and safety standards are rewritten to specify "acceptable" rather than "zero" levels of suspect substances. For example, the FDA would approve levels of potentially harmful substances that are safe and acceptable in low dosages.

#### International Business and Economists

During the decade of the 1970's, the dollar volume of world trade increased phenomenally. Now, in the words of former Undersecretary of State George Ball, "Working through the great corporations that straddle the earth, men are able for the first time to utilize world resources with an efficiency dictated by the objective logic of profit." And the decade of the 1980's promises to be even brighter for the multinational corporation which is, according to Senator Daniel P. Moynihan "arguably the most creative international institution of the 20th Century." At least the near term looks bright for the multinational business. According to the Wharton Econometric Model, there will be a real increase in world trade of 2% in 1980 and 4% in 1981.

This increase in world trade is being greatly abetted by the recent, enormous foreign investments by U.S.-based multinational corporations in countries outside of Europe (the traditional focus of U.S. investments in 1978 alone). Because foreign-based multinationals increased their investments in the U.S. by more than \$6 billion during the same year, it was necessary defensively for the U.S. multinationals to increase their investments abroad to protect their market shares.

Nevertheless, the energy crunch presents a bigger threat to U.S. multinationals than does increasing competition. Because of rising oil prices, many nations now find themselves in foreign exchange binds. In order to preserve foreign exchange for the purchase of petroleum, many countries have been moving to greater protectionism and control of foreign corporations. For example, some nations are now demanding that multinational corporations must export a fixed percentage of their products in order to earn foreign exchange. Some countries have erected higher import quotas. And some are moving to barter transactions (as when the Soviet Union purchased Pepsi Cola not with cash but in exchange for Stolichya Vodka). Nevertheless, many economists now worry that the 1940-70 American domination of the world economy was an historical anomaly. These pessimists point out that, for most of its history, America has taken a back seat in international trade to the countries of Northern Europe, and that America's recent success was only the by-product of the devastation of its competitors during World War II. The next decade, they warn, will be the decade of Europe (and Japan). To support this assertion, they point to recent OECD figures that show the U.S. slipping from first to fifth place in per capita income behind Switzerland, Sweden, Denmark, Norway and Iceland, and soon to be surpassed by West Germany and Belgium. Moreover, in terms of economic growth, productivity, balance of trade and other leading international economic indicators, the U.S. is also slipping behind many nations it had recently dominated.

To regain America's competitive edge in the 1980's, economists generally argue that the country must increase its efforts in four inter-related areas: capital reinvestment, productivity, technological innovations, and exports. Below are some future events that, if they were to occur, would contribute to improving America's position in the world economy:

- \* The U.S. ends its double taxation of corporate profits (i.e., it would halt the current practice of taxing the income again after it is paid out to shareholders as dividends).
- \* The U.S. government establishes a development corporation similar to those in Japan and Britain, designed to support research and development of products for export.
- \* A North American (U.S., Canada, Mexico) Common Market is established.
- \* The federal income tax structure is indexed to offset inflation-induced tax increases.
- \* Capital gains taxes are reduced or eliminated.
- \* Major Western nations coordinate their economic policies.
- \* U.S. national policy is to eliminate trade deficits primarily through encouraging exports.

In conclusion, one prediction about the future seems safe: the next decade will be a watershed for America. The 1980's represent an unprecedented challenge for the nation to recover from the shocks of the 1970's and to regain its economic and moral leadership of the free world.

MR. CORBETT: Thank you very much, Jim, for getting our meeting off to such a fine start. You certainly covered a comprehensive range of problems and opportunities that might face us in the future. More important, I believe you have shown us how futures-oriented thinking can be used by actuaries in planning for the 1980's.

I am sure that our panelists and the audience will have some interesting questions for you later.