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THE ACTUARY AND HIS PROFESSION:
GROWTH, DEVELOPMENT, PROMISE

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It has become almost trite to observe that we live in an era of rapid change. Yet we need to recognize that change quite clearly, as it applies to our profession, if we are to understand where it is we are, and where we should be going. It was exactly twenty years ago this month that I wrote my first actuarial examination. In the ensuing score of years, our Society has more than doubled, and it has become increasingly difficult to get around at the receptions. The basic industry we serve has grown at a compound rate of 10% during that period. The business has spread from pure casualty to multiple line, and, in recent years, increasingly to a combined life and casualty operation. Liability business has grown more rapidly than property, and the relative shares have shifted dramatically. At the same time that the proportion has shifted to the longer tailed business, the tail itself has grown. Perhaps it would be more accurate to say that our perception of the length of the tail has grown, since it is now clear that the tail that lay ahead of us back in 1960 was a great deal longer than we ever imagined, even in our wildest nightmares. In two data bases with which I am familiar, we are still getting upward developments on the 1960 accident year. If I had answered one of those 1960 examination questions in a manner that indicated that I believed that a tail exceeding 20 years was appropriate, I suspect that I might have been given another opportunity to try again the following year.

In that 20 years, we have also experienced unprecedented rates of inflation, and, perhaps more importantly, the changes in the rate of inflation have become greater. A fairly persuasive argument can be made that we can handle a steady inflation rate, although that has never been tested at today's inflation levels. Accompanying these higher inflation levels have been higher rates of interest. Unfortunately, the interest rates seem to lag, with the result that negative real rates of return have been all too common in recent years.

Change in the computer area has also been extensive in the last twenty years. When I started, a great deal of information was handled on punch card equipment, and calculators produced ratios only slowly and noisily. Yet, today we can buy programmable calculators that, among other things, make our examination on compound interest obsolete.

In addition to the growth of our Society, there has also been a major shift in the employment of our members. They have increasingly gone to work for smaller and independent (as opposed to bureau) companies. More of you now work in the reinsurance field, and in consulting. Brokers and accounting firms increasingly employ you. Our Canadian membership has grown sharply, and many of you have substantial experience in the foreign and multinational side of the industry. And the increasing levels of responsibility held by members of our Society are a real credit to us all.

One area of significant change in recent years is education. Today's college graduates are better educated, particularly in mathematics and sciences, than were the students of a decade before. One can only pray that some day the same will be true of their writing and communications skills. But in mathematics, statistics, and computers, we face a great danger that our education and examination system will fail to keep up with the changes in the undergraduate curriculum, with the result that our profession will be less attractive to the most able students.

As an example, we continue to examine the subject of life contingencies, utilizing a special algebra and notation that were developed decades ago, when storage was cheap and computation was expensive, when addition and subtraction were significantly easier operations than multiplication, and division was to be avoided until there was nothing else that could be done. Yet, as any student will tell you, life contingencies problems are solved on the computer today in an entirely different manner; sometimes, however, the program has an additional routine that calculates the commutation function values so that the older actuaries will feel comfortable with the computer output. This is an area

where change is needed in our education and examination system if we are to continue to attract good students. There is, perhaps belatedly, a new textbook under development that addresses the problem. In the compound interest topic, however, technology has really overwhelmed us; you can now buy a calculator for less than \$100 that does it all more accurately, without tables, at any rate and term you can express in decimal form, and you don't have to move the bond to the coupon date first.

On the later examinations, our record is better. We hope no semiconductor manufacturer will decide to take the business risk of developing a single chip that is capable of producing an entire workers' compensation experience revision filing, but given the growing interest of corporate risk managers and financial officers, it might not be too farfetched to imagine an individual risk rating chip. Seriously, our later examination material is more challenging and current, due in part to the continued flow of new papers in the *Proceedings*. As in recent years, the discussion paper program has generated additional material that aids the education process. This past year we appointed a new Education Policy Committee, which will undertake the review of several of these questions. I am hopeful that they will be equal to the challenge, and that our education and examination system will attract the able students we need if we are to continue our growth and diversification.

Another result of the changes in recent years is that we are becoming a single actuarial profession, albeit with casualty, life, and pension specialties. The cross training between the life and casualty branches of many of the larger companies and consulting firms is one evidence of this. The growth of the common core to four examinations is another, and it is resulting in a greater overlap in membership between the Casualty Actuarial Society and the Society of Actuaries. The much closer working relationships between the various actuarial organizations on a variety of matters is also evidence of the growing oneness of the profession. It does, however, seem clear that a major reorganization of the profession in North America will not be seriously pursued in the near future. There will, though, be an increasing reliance and interdependence among the various bodies. I view this positively, and believe that all branches of the profession will benefit from the increased cooperation. Our long range goal should continue to be a reorganization that preserves the many advantages that we enjoy with a separate Casualty Actuarial Society. While there is no need to hurry, I suspect that before another decade has passed, it will come about.

The growing oneness of our profession is due in large part to the fact that

we are in the process of becoming a *public* profession. This process is occurring in all branches of the profession. In life insurance, an actuarial signature on the statement has been required for several years. In the near future, the life actuary will also be required to take a more public posture on the dividend policy of his company. In pensions, ERISA has required an actuarial signature, and furthermore it specifies that the actuary shall act on behalf of the plan participants and beneficiaries. In the casualty area, we have a new annual statement instruction that requires the signature of a loss reserve specialist, and the only class of signators that is presumed to be qualified is actuaries.

(The history of how that instruction came to be in its present form, rather than some of the undesirable earlier versions, is an excellent example of the cooperation among the several branches of the profession. Both the American Academy and the Society of Actuaries helped to insure that the decision makers in the various insurance departments were well informed. The Academy's Committee on Relations with Accountants also assisted greatly.)

A characteristic of all these signature requirements is that the ultimate client of the signing actuary is no longer his employer, but rather is now the public that relies upon his signature. It is no longer the life insurance company whose statement is being signed, nor the employer whose pension plan is being evaluated, nor the casualty insurer. The actuary's clients, instead, are those policyholders and beneficiaries to whom the insurer or plan is obligated.

An important distinguishing characteristic of any profession is that its members put the interests of their clients ahead of their own; otherwise, it is no profession, but rather a group of skilled businessmen or tradesmen. The actuarial profession has historically been preponderantly a private profession. We worked as employees of insurance companies and their service organizations, such as rating bureaus. The client relationship was clearly to the employer. But the signature examples cited above are transforming the client relationship, because they are creating a public client beyond the employer, whose interests must be put ahead of both our own and our employers' interests.

Not all of our client relationships are becoming public, of course. Many of them can be expected to remain private. To draw an example from another public profession, the independent auditor has a public client relationship when he signs the opinion letter in the stockholders' report; but he still may offer other service and advice to his client on a private basis. So, too, will an actuary have a public client relationship when he signs the statement of opinion on loss

reserves. But many other activities, such as advice on a competitive pricing strategy, will continue to be based on a private client relationship.

As we evolve from a private to a public profession, our loyalties and allegiance to the profession will grow relatively stronger. We will look to the profession to set the standards of conduct and to enforce them. Doing so is not an easy process, and we have had and are having our fair share of difficulties with it. I trust that in time we will succeed, if for no other reason than that the alternative of governmentally imposed standards is unacceptable to the majority of us.

Another result of our shifting loyalties is that we increasingly look to the profession to represent our interests to the various other groups with whom we must deal. In prior years, most casualty actuaries looked to their company and its trade association to deal with the NAIC or a legislative body. Today we increasingly look to the CAS and the Academy to fulfill this role where our professional actuarial interests are at stake. Those bodies were instrumental in developing a satisfactory reserve opinion instruction for the annual statement. We also have the Academy testifying in Washington on age and sex discrimination. Similarly, we look increasingly to the actuarial bodies to handle the relationships with accountants.

An important part of becoming a public profession is the establishment and enforcement of standards of conduct. The rest of my remarks are devoted to a discussion of some of the issues in the professional conduct area.

When I was teaching at the University of Michigan, we had a brown bag luncheon group of students that discussed questions of actuarial ethics. Our discussion material was the Guides and Opinions on Professional Conduct, and a series of case studies, usually less than a page in length, each containing an ethical question. In a typical situation, an actuary would find himself in a dilemma, where choosing the ethical solution might result in loss of his job. A lot of our luncheon discussion was spent clarifying the nature of the actuary's duty in the situation, and to whom he owed the duty. While I found the discussions interesting and helpful, it was my observation that ethical questions in the real world seldom arise in neat little one page summaries. Also, I felt that the students attending the luncheon were those who needed the discussion least.

I have also been privileged to participate in two panels on ethics at actuarial meetings. Both utilized short skits to create questions about the ethics of one of the characters. The audience's reaction was then sought on the degree of

misconduct and fitting punishment: should the actuary involved be warned, admonished, reprimanded, suspended or expelled? Many of you were present at one of those sessions and may recall that the expressed standards of the audience were quite high. Furthermore, as the skits progressed the severity of the recommended punishment seemed to increase, to the place where it seemed that a sixth alternative might be needed, namely execution.

Before we take too much comfort in that audience reaction, however, I think we may need to look a little more closely at the kinds of issues that receive attention in the professional conduct area. In doing that, it may be helpful to categorize the issues into two main groups: procedural and substantive. In the procedural group, we refer to questions that seek to determine whether the actuary went about his assignment in the correct manner. A significant portion of our professional conduct guides and opinions are devoted to such procedural issues. Was the advertising professional? Did the report contain enough information so that another actuary could appraise the conclusions? Were the appropriate limitations and caveats expressed? These are important questions, and there are unfortunately too many times when the standards are not met. It is my impression that the majority of the questions and complaints reaching the discipline committees of the several actuarial bodies are procedural questions. I believe that our standards in the procedural area are in reasonably good shape, although, as usual, there is room for improvement.

We need to focus on the other category of professional conduct questions, the substantive questions. This is the area that asks not whether the actuary went about his assignment in the proper manner, but rather, did he complete it correctly? Was the actuarial content correct? In this area the questions become much more difficult. What we are really talking about is whether the work is actuarially sound. Here the Guides and Opinions of the American Academy give way to Recommendations and Interpretations. And, lo and behold, they even advise us, in the pension area, to eschew the phrase, "actuarial soundness."

The problem, of course, is in the elusive nature of the concept of actuarial soundness. How do you determine whether an actuary's analysis or recommendation is sound?

One potential course of action is to determine whether a correct method was used. This leads us to the development of standards of practice, which are expressed in Recommendations and Interpretations. In both the life and pension areas, considerable progress has been made; and with the advent of the casualty

loss reserve opinion, it is vital that we develop the necessary standards in casualty loss reserving. Our initial efforts will not be perfect, of course.

Such standards would only provide safe harbor, and would not prohibit the use of alternative methods where they are warranted. Some prohibitions may be desirable, or at least a recommendation that an unsatisfactory method not be utilized except under carefully controlled circumstances. This is the negative approach, to be sure, but many of us have stronger beliefs about what is actuarially unsound than we do about what is sound.

This brings me to a point that merits particular attention. The underwriters who complain about our "actuarially unsound" judgments often say that "it may be actuarially unsound, but you have to introduce some business judgment." In my opinion, this assumes a false dichotomy between actuarial soundness and business judgment. The implication is often one of mutual exclusivity. Business judgment and actuarial soundness, in these discussions, become antithetical. More appropriate, I suggest, is the opposite. If it's actuarially sound, then it should be good business judgment; and it clearly is poor business judgment to implement something that is actuarially unsound. This may require a somewhat broader concept of actuarial soundness than some of us have used in the past. Marginal pricing, for example, rather than fully allocated costs, need not be seen as actuarially unsound. Or pricing to protect long-term market share. The training and expertise of the actuary is ideally suited to making such evaluations, and to their necessary quantification.

Part of what the underwriters are complaining about is our tendency to utilize the answer from our model (the black box) as the only actuarially sound estimate. As an illustration of the good job we've done selling the black box, I was recently involved in a hearing where a non-actuary was asked if he had fit a disputed trend line. No, he said, his assistant did. Was the assistant an actuary? No, again, but he used the actuary's machine. And what is an actuary's machine? You punch in the number, was the reply, and out comes the answer.

We need to recognize that the answer from the black box is at best the expected value of some distribution function. We often need to develop some estimate of that distribution function. We also need to recognize that there is a great deal of judgment involved in selecting or designing the black box, and in selecting the data we punch in. All of which needs to be factored into our decisions about actuarial soundness and business judgment.

We also need to work on the improvement of our models. All of us are able

to suggest improvements in our own areas of expertise. The flow of new papers, and the outstanding success of our discussion paper program are very healthy aspects of our Society. And it is from this literature that our Recommendations and Interpretations will be distilled. There are some difficult areas ahead, however. We are grappling with the appropriate methods of handling investment income, in both pricing and reserving, but our progress has been slow, and the environment, with its increasing investment returns, is creating additional pressure. The area of risk classification is another difficult area where we are making progress, but perhaps too slowly.

The most disturbing development, however, may be found in a paper presented at the International Actuarial meetings this summer in Switzerland. Authored by Professor Jewell of the University of California at Berkeley, a past participant at our own meetings, the paper surveys the state of the art in actuarial models (or black boxes) and suggests that we are on the threshold of a major period of rapid change, wherein many of our models will be discarded because they no longer are valid in our changing world. The models that replace the old ones, suggests Professor Jewell, will be sounder and will draw on recent developments in statistics and management science, and will more effectively utilize the new computer capabilities. Professor Jewell's paper is most provocative, and I commend it to your attention. His challenge to the profession is very basic, and I hope that we will be equal to it.

All of these potential improvements in our models are vital. Many of them will help in our difficult task of developing standards of practice as they relate to assessments of actuarial soundness. It will not be easy, but it is necessary if we are to be successful as a public profession.

I would like to close with a story about a conversation I had several months ago with Haeworth Robertson, who was formerly the Chief Actuary of the Social Security Administration. I was lamenting the actuarial profession's lack of influence in the economic affairs of the nation. Considering the size of the asset pools of the casualty insurers, the life insurers and the pension plans for which actuaries serve as stewards, the influence seems small. Haeworth listened quietly, and then observed that my idea was reasonable, but that I had the wrong side of the balance sheet. Considering the liabilities which the actuaries are responsible for evaluating, the influence is clearly too small. As we become a more public profession, our influence will grow. Our challenge is to develop the standards of professional conduct that will enable us to soundly evaluate those liabilities.