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## SOCIETY OF ACTUARIES RESEARCH

*Moderator: DWIGHT K. BARTLETT III. Panelist: JAMES L. COWEN*

MR. DWIGHT K. BARTLETT, III: One important purpose of this open forum is to introduce James L. Cowen, the Society's new Director of Research, to those in attendance at this meeting who are interested in the Society's research activities. Jim will obviously play a key role in the Society's research activities as we go into the future. For those of you who do not know Jim, Jim is a very distinguished member of our profession and the Society is fortunate to get someone of his ability, talent, and background to take on this job. Jim has spent most of his professional career with the Railroad Retirement Board (RRB) and served one term as the head of that board which is a Presidential appointment level job. Jim also has experience in the pension field.

The most important purpose of this open forum, however, is to provide a forum at which interested persons can make specific suggestions about what the research needs of the profession are and how they might most effectively be carried out. Frankly, I hope we get a lot of specific suggestions and the more specific your suggestions are the better the chance that something will be done about the suggestion. If your suggestion is specific enough, we will refer it to the appropriate committee of the Society to get a reaction to the suggestion. The answer we get may not be exactly what you are looking for but I do promise, to the extent possible, we will try to provide some kind of concrete answer to the suggestion you may make about Society research.

Before turning the floor over to Jim I would like to make some comments from the perspective of the Society officers and Board of Governors. In 1979, a committee of the Board of Governors, which was chaired by Robin Leckie who was then the Vice President for Research and Studies, prepared a report on actuarial research for the Society of Actuaries, which set objectives against which our progress since that date can be measured. It is perhaps worth restating what the key recommendations of that report were and what progress has been made to date.

1. Establish a Research Policy Committee to plan and supervise the Society's research and experience studies and to prepare an annual research plan.

A Research Policy Committee has been operational since 1979. The Vice President of Research and Studies is automatically chairman of that committee. Jim, of course, will be the principal staff person for that committee.

With respect to establishing an annual research plan, we are really just getting started in that activity. One of the first things we plan to do is to ask the committee chairmen who are under the supervision of

this committee to tell us what their plans are for the next year or two. We will try to pull those plans together and publicize them to the Society membership so that they can react as individual Society members to the committee's plans.

2. Appoint a paid Director of Research to be located in the Chicago office.  
Jim Cowen is living proof that we scored 100 percent on that objective.
3. Set up a research information center in the Chicago office.

We have a library in the Chicago office which is somewhat disorganized. Clearly a lot of work needs to be done on the library. Also, we need to do quite a bit of work to create an information center from which Society members can get feedback from the Chicago office on where items of research can be found. The information may not necessarily be found in the Chicago library but the members would be informed of where the information could be found. In a sense, Jim and to a lesser extent Linden Cole have been operating in this capacity, but that is not the way we intend to operate in the long run.

4. Appoint a committee(s) to look into: (i) centralized compiling, (ii) standardized format of studies, (iii) cost benefit research standards, (iv) review of current research.

We have some serious problems in the ongoing conduct of our mortality and morbidity studies. More and more companies are feeling the stresses of the current economic environment and see less and less value to devoting scarce resources, financial, human, and computer hardware-software, to be engaged in these studies. A number of companies have either withdrawn from being contributing companies or have indicated a desire no longer to be the compiling company for these studies. Of course, historically these have been the main items of research that the Society has carried on as an organization, as opposed to research done by individuals in their employment setting. If we lose these studies or they are seriously damaged because of the withdrawal of contributing and compiling companies, we have probably lost the single most important type of research that historically has been carried on by the Society. The Research Policy Committee has identified investigation and solution of this problem as the number one activity that we want Jim to become involved in. Jim will be operating in a staff capacity and working on this problem. It is not up to him to solve the problem but it is up to him to help the Research Policy Committee identify possible solutions to this very serious problem.

5. Appoint an ad hoc committee to look into the research requirements of pension actuaries.

Quite frankly we have not done a great deal in this particular area. There seems to be considerable difference of opinion concerning the extent to which the Society has met or failed to meet the research needs of the profession in the pension area. It is something we will have to wrestle with and hopefully we will deal more with this issue now that Jim is on board. Of course, it will be helpful that Jim has a pension background. Again this is an area where we would be particularly interested

in comments from you as to what kinds of research you need as operating professionals in the pension area.

6. Promote research through (i) improved liaison with universities, (ii) research scholarships, and (iii) research competitions.

The first thing the Research Policy Committee did was to convince the Actuarial Education and Research Fund (AERF) to put up some prize money for contributed papers in connection with the special purpose meeting in Houston next year on the subject of inflation. They did agree to provide two prizes, one for the best paper in the area of inflation and life insurance and a second for the best paper in the inflation and pension area. I understand from Ed Porto, Chairman of the Committee on Papers, that four papers were received in response to this call. All of them were in the pension area so that unfortunately no prize will be granted in the life insurance area. Hopefully the Committee on Papers will conclude that one of those four papers in the pension area merits a prize.

7. Clarify the roles of and relationships between AERF and the Society of Actuaries.

I am delighted to see that Cecil Nesbitt has found it possible to be with us. He is operating as the part-time Director of Research for the AERF. We have Jim here as our full-time Director of Society Research. I am sure there will be improved communications between the two organizations.

These are the seven recommendations that the board committee made. As you can see, some progress has been made in the last two years with respect to these recommendations but not as much as we would like. I would hope that a year from now we would be in a position to make a more favorable report with Jim Cowen's help.

One of the major things that the Research Policy Committee accomplished in this past year was to complete a paper dealing with the scope of research of the Society. The paper was adopted by the Executive Committee of the Society. I would like to remark on a few highlights of the paper.

In the paper the Research Policy Committee identified three different types of research: (1) experience studies, (2) theory research, and (3) practice research. As we attempted to draft the paper and get it ready to submit to the Executive Committee, the area we had the most difficulty with and which produced the most discussion in the Research Policy Committee had to do with the practice area. In the practice area we identified two aspects of research, one I would call the study phase and the other the conclusion phase. Frankly there were a number of members of the Research Policy Committee who felt a substantial amount of discomfort with the Society research activities being involved in the conclusion phase. On the other hand there was a feeling in the Committee that historically the Society has been involved in the conclusion phase when it came, for example, to recommendations of mortality tables for valuation purposes in response to requests from the NAIC. Finally we came up with a paper that tries to walk a very narrow line so that we do not lose our credibility with the NAIC and other organizations which have historically looked to the Society to come to a specific conclusion and recommendation in practice research.

The paper in effect states that we should continue to respond to those kinds of calls but that normally Society research should not be aggressively moving in the direction of arriving at conclusions in research related to the practice of actuarial science.

Mr. Cowen has requested that the "Society of Actuaries Scope of Research Statement of the Research Policy Committee" be written into the record--

The Society of Actuaries Research Policy Committee has prepared this statement describing its current view of the scope of research of the Society of Actuaries. The Committee recognizes the dynamic aspects of actuarial research needs and efforts and expects that this statement will need to be modified from time to time as conditions warrant.

The Society's research function is to support and encourage actuarial research efforts for the benefit of Society members and those served professionally by Society members.

The Society fulfills its research function by providing:

- (1) an organization framework consisting of committees and task forces to identify the needs for actuarial research and to promote research efforts of its members,
- (2) forums for discussion and debate of results of actuarial research,
- (3) means of publication and dissemination of results of actuarial research,
- (4) assistance to members in obtaining results of research from outside the Society, and
- (5) assistance, where needed, in allocating scarce actuarial research talent, funds and other resources among alternative research projects.

Actuarial research efforts of Society members may be classified generally into three categories as follows:

- Experience: Collection, analysis and reporting of mortality and morbidity data and other data pertaining to actuarial science, such as expenses, investment results, compensation increases, lapses and withdrawals. This category includes preparation and graduation of experience tables, and development of projection factors.
- Theory: Discovery and refinement of mathematical and statistical theories and techniques relevant to actuarial science.
- Practice: Research and development relating to actuarial business practices and principles affecting the management and regulation of insurance companies, employee benefit plans and government programs.

This classification is not intended to be exhaustive, nor are the categories mutually exclusive. The major distinctions among the three categories concern the role assumed by the Society, as an organization, in fulfilling its research function for each type of research.

The Experience category includes most of the work of the Society's various mortality and morbidity experience study committees. The Society has a tradition of collecting and analyzing mortality and morbidity data, at least with regard to private insurance and pension programs, and of preparing and graduating experience tables. The Society's Board of Governors decides which studies will be made and what results will be published, and raises funds to pay for the studies by assessing insurance companies and other employers of actuaries willing to support such research. The work is generally regarded by Society members and others as research performed by the Society, not as research performed by individual actuaries or members of Society committees and, given the historic role of actuaries in studies of mortality and morbidity, this view seems appropriate.

The Society's role in performing other types of Experience category research is less clear than its role in mortality and morbidity studies, partly because the Society has less of a tradition of performing such studies, and partly because studies of expenses, investment results, compensation increases, lapses and withdrawals may be relatively less actuarial in nature and other organizations may be as qualified to perform such studies. The proper role of the Society in performing such research needs to be determined on a case by case basis.

The Theory category of research is vital to the long term growth of the actuarial profession and long term professional growth of Society members. It deserves major attention. Unlike Experience category research, the Theory category is mostly the work of individuals, although the work may be encouraged and supported by one or more Society committees. The results of such research are properly identified with the individuals performing the research. Generally, the Society's Board of Governors is not asked to determine what Theory category research should or should not be done and the results are not generally perceived to be Society research. The Society's role here is largely catalytic--that of providing facilities to support and encourage those individuals who choose to perform the research and providing means for the communication and publication of the research.

The Practice theory of research includes much of the work of the various committees on dividend practices, valuation principles, and pensions, as well as much of the research of individual Society members. It is important to distinguish between two phases of Practice category projects as follows:

- Study phase: The formulation, calculation and analysis needed for the development of actuarial business practices and principles.
- Conclusion phase: The actual development of business practices and principles and recommendations leading to their adoption.

An example of a Practice category project would be research into the risk of loss to insurance companies due to changes in the interest rate environment and development of a new framework of valuation requirements for insurance companies that gives proper recognition to the nature and magnitude of this risk. The Study phase of this project would involve the projection and analysis of liabilities for various insurance company products and the supporting assets under various assumptions as to future economic conditions and market conditions and behavior of the insurance company's policyholders, borrowers and company management under such conditions. The Conclusion phase of the project would be the actual development of proposed changes in laws and regulations governing the valuation of life insurance companies and steps toward recommending adoption by regulators and legislators.

The Society is frequently called upon by Society members, by regulators, or by others to perform Practice category research in its Study phase, Conclusion phase, or both. The proper role of the Society for this category, particularly with regard to the Conclusion phase, is more complicated than for the other categories of research.

The Society's Board of Governors will frequently agree to undertake the Study phase of a Practice category project, when called upon to do so, designating individuals or committees to perform the research, assigning priorities, even raising funds to pay for the research if needed and appropriate. The Board may decide to endorse the results of the Study phase of a project and in effect adopt the work as Society research.

Having undertaken the Study phase of a Practice category project, the Board may then decide to carry through the Conclusion phase either by expressing an opinion itself as to specific recommended business principles or practices or directing a Society committee to express an opinion. Alternatively, the Board may decide not to involve the Society in the Conclusion phase.

The Board may decide to carry through the Conclusion phase because of historical precedent or other sufficient reasons--e.g., in response to a specific request from an NAIC committee to recommend a new valuation mortality table. If the Board does choose this route, however, it must be emphasized that recommendations as to business principles and practices made by the Board or a Society committee normally constitute expressions of opinion and therefore must meet the requirements of Article X of the Society's Constitution as well as any guidelines for the implementation of Article X set forth by the Board.

As indicated earlier, the Board may choose not to carry through the Conclusion phase even for a project whose Study phase was carried out by the Society. This route is particularly appropriate in situations where a recommendation as to a business principle or practice involves a choice among several reasonable alternatives. In any case, Society members are, of course, free to use the results of the Study phase and to make recommendations involving the Conclusion phase acting as individuals, or representatives of employers or clients, as representatives of other actuarial bodies or as representatives of trade associations--but not as representatives of the Society or of one of its committees.

MR. JAMES L. COWEN: The job of Director of Research of the Society of Actuaries is a new one which will have to be developed. I have only been on board since August 24 (and since then I have been out of the office about one-fourth of the time at meetings). I am busy trying to find materials showing what has been done in the past and looking at materials on research which I, like most line actuaries, never get around to reading.

To be successful in this job, I will need the assistance and cooperation of the members of the Society in helping to define what research is needed and to keep track of what has been and is being done. The studies which appear in the reports numbers of the transactions and papers which appear in the transactions can be easily located. However, there is much other actuarial research which does not appear in those publications and about which I will need to be informed. A significant number of inquiries asking for information are received in the Society's office which come to me. To name a few, I have received requests as to whether I was aware of any mortality tables for quadriplegics or burn victims, and also whether there was a select and ultimate mortality table for airline pilots. I was not aware of any at the time of the request but I have since become aware that some of these studies do exist. But, as Dwight said, the Society library does not get too much information about new material. I had to tease Dwight when I found out that the Society office does not even get the actuarial studies put out by the Social Security Administration. I have made contacts to make sure we will get these, but I am certain there are many other studies which we do not get which are put out by other sources. We should know about these and begin to receive them.

As defined by the Research Policy Committee and the Board of Governors, my job as Director of Research is an administrative one in which I will give support to those committees involved in research. I will not be doing the research, but will be coordinating it and identifying areas where research may be needed. I will be acting as a liaison between the committees and with other organizations such as the American Council of Life Insurance (ACLI) and the Life Insurance Marketing and Research Association (LIMRA). To be more specific, my responsibilities as adapted by the Board of Governors of the Society include, but are not limited to, the following:

1. Review and analysis of existing experience studies and other research projects. Recommendations of possible alternative approaches to Research Policy Committee.
2. Coordination, review and recommendations to Research Policy Committee on terms of reference, procedures, goals, costs, funding, standards and disposition of proposed new research projects.
3. Coordinate procedures for publication and dissemination of results of research.
4. Develop and maintain a clearing-house of research and experience studies of interest to actuaries. Coordinate publicity of the availability of such information.
5. Communicate with and assist where appropriate universities and organizations (AERF, ACLI, LIMRA, etc.) performing research of interest to actuaries.

6. Assist Research Policy Committee in preparation of an annual research plan for the Society.
7. Communicate with and assist the appropriate Society committees in developing research-related meetings, seminars, etc.
8. Performance of services for other organizations (such as AERF) as agreed upon.

Everyone may not be clear as to the kinds of projects which are deemed to be within the scope of the Society's research function. Basically the Society puts actuarial research in three categories as follows: (1) experience studies, (2) theory, and (3) practice.

Most of us are aware of the mortality and morbidity studies done by the various committees of the Society. These are important experience studies, but there are others and there are some which are not being done, but which probably should be done. Also included in the area of experience studies are the preparation and graduation of experience tables and the development of projection factors.

Theoretical research involves the discovery and refinement of mathematical and statistical theories and techniques pertaining to actuarial science. This type of research is usually done by individuals and presented in the form of papers. Unless actuaries want to become obsolete, it is necessary for the profession to progress through this kind of research. The technological changes now taking place, especially in the area of computers, could permit much of the work now done by actuaries to be done by machines. I know that many of us have complained about papers in the transactions being too theoretical and not understandable. One senior actuary was recently overheard to say that papers in the transactions were no longer written in English, but in a series of formulas involving Greek letters. Regardless of these complaints, we must all realize that it is this theoretical type of paper which brings out new discoveries which may become useful tools in the future.

Research which is classified as practice involves research and development relating to actuarial business practices and principles affecting the management and regulating of insurance companies, employee benefit plans and government programs. This is an area where there may be overlap between actuarial responsibility and that of other professions.

What I have said up to now has been pretty general. We all know that everything cannot be done at once and that a systematic approach is needed. At a recent meeting of the Research Policy Committee, the following priorities were set for me: (1) a review of the administration of the mortality and morbidity studies, (2) the preparation of a catalogue of existing actuarial research and (3) a survey of the chairmen of the various research committees eliciting their plans for the next several years.

Up to now, the committees have done all the work and kept all of the documentation as to what has been done. As the chairmen and members of the committees change, records of what has been done in the past have sometimes been lost and continuity suffers. Also much of the work has been done by various companies and when that work is shifted to another company, the

software packages previously used may not be adaptable to the hardware of the successor company. Because of this, the Research Policy Committee feels that the review of the administration of the mortality and morbidity studies must be my top priority. A questionnaire on this should be released to committee chairmen in the near future if it has not already been mailed. The responses to this should permit files to be set up at the Society's office which will provide for continuity and have a single place where documentation of past studies can be found.

Some other problems which arise in the production of the mortality and morbidity studies pertain to data collection. Usually data is submitted by those companies who have members on the particular committee with a few other companies also contributing. It would be desirable to obtain data on a much broader scope and to try to retain the same companies as contributors for each succeeding study.

Another data collection problem is the format and contents of the data submitted. Differences of equipment and procedures within the various companies, of necessity, mean that the data is submitted in different formats and with nonuniform content. Preliminary work is necessary before the data can be combined and this requires knowledgeable people. Some companies, I understand, are now objecting to having their people spend time on those projects, especially the time of those people for whom they do not get reimbursed. One of my first and most important duties is to find out how extensive this discontent on the part of the companies is and to try to retain their cooperation.

Classification of data for the experience studies also causes problems. To be meaningful, the experience studies must have data which is as uniform as possible. However, every company has its own underwriting practices so that insuring uniformity of data is not easy. Although the descriptions may appear to be the same, in actuality, there might be significant differences in the data due to administrative practices. Thus, any wide differences in the results for a particular company would raise the question of classification of its data with regard to that of other companies. Because of this, the committees spend considerable time in evaluating the data that is submitted. Therefore, the descriptions of data must be complete so that its classification will be easier and this must be stressed to the contributing companies.

Many consultants have complained that there are insufficient experience studies for decrements other than mortality for use in pension plan valuations. This is true, but the problem of uniformity of data for these other decrements is more severe than that for insurance experience. Retirement and disability rates are very susceptible to economic conditions and plan provisions also vary greatly. Since very few plans are identical as to size of benefits and eligibility provisions, it is very unlikely that uniform data will be available which would permit the combination of the experience of several plans. Even within a single industry, benefit levels and eligibility conditions can differ significantly. It is hoped that some means of overcoming these difficulties will be found, since this is an area where there is a need by actuaries to small pension plans.

Another problem in performing experience studies for these other decrements is the obtaining of sufficient data to make the results meaningful. This

is especially true when the experience is to be studied by age, duration, industry, size of benefit and many other factors which may affect the rates. Very few plans would have sufficient experience by themselves to study all decrements. These kinds of studies have been requested, but because of the above problems, they have not as yet been undertaken by the Society. At present, the best sources for this kind of experience study are the large governmental plans such as Social Security, Civil Service and Railroad Retirement.

In the area of theoretical research, much has been published in ARCH, Actuarial Research Clearing House, as well as in the transactions. The Committee on Research of the Society sponsors annually an Actuarial Research Conference which is limited to one topic and the proceedings of these conferences are published in ARCH. I hope most of you here are familiar with ARCH. I was not aware of it nor had I seen a copy until I started this job. This points up another need, the publicizing of the research being done and having the results used. Many actuaries just do not have the time to read everything that crosses their desks, especially in the realm of research, unless they can see an immediate use for the material. Suggestions have been made for special publications geared to each type of actuarial practice, i.e., life insurance, health insurance, pensions, etc. These are areas which will have to be reviewed.

One of my first functions as Director of Research of the Society was to attend the Actuarial Research Conference at the University of Manitoba. This was my first real contact with the theoreticians in the Society and I was impressed. However, I was struck by the limited contact between line actuaries and those members of the Society. Some of the academics at that meeting were complaining about the limited number of journals in which they could publish and publish they must or lose their positions. They also were looking for means of getting financing to do special research projects and to determine subjects which would be of interest to the line actuaries. Since this is of value to the Society membership, I feel that we all have to keep our eyes and ears open and when something comes up, I should be informed. In this way, I will be able to match projects with those who have expertise in the subject.

Research in the area of practice involves getting into subjects where it may be desirable to change laws or regulations. It involves the way things are done and what effects changes in procedures, etc., will have. This type of research generally can be broken into two parts and the second part need not always be done. The two parts are (A) a study phase and (B) a conclusion phase. Because of the political nature of these subjects and because there may be more than one acceptable approach, it is not always desirable to do the conclusion stage which might involve an opinion or recommendation concerning the practice.

What I have said are the basics. There are of course, many other things involved which will have to be considered. Some actuaries have suggested that we need more research on the effects of demographic and sociological changes on the security systems. I recently saw a piece in the paper where an economist was expecting that all types of financial institutions--i.e., banks, savings and loan associations, insurance companies and mutual funds--would merge and form a new type of financial institution due to these factors. If this is so, that type of research is definitely needed. Another well-respected actuary has stated that actuaries have social responsibilities and need to get involved. This also will require research functions.

Finally, there is the question of what responsibility the Society office should have to supply information on individual questions and how much research material should be in the Society's library. In the short time I have been on the Society staff, I have been astonished at the number of requests received. At present, however, the library is not of much value and our ability to answer rests on the knowledge Linden Cole, the Director of Education, and I have. We are the only two actuaries on the staff and his experience is in life insurance and mine in pensions. With the passage of time, it is going to become more difficult for the two of us to keep abreast of new developments and be able to answer the questions.

One final item to be mentioned is getting qualified people to serve on the research committees. Committee membership is usually filled by the chairman asking someone if he or she is willing to serve. Sometimes the chairmen have difficulty in finding qualified people willing to be on the committees. Therefore, if any of you would be willing to serve on any committee, please let me know and tell me what your field of expertise is. In this way, I can have a list of willing members to refer to the chairmen each year before they select the members to fill vacancies on their committees. I cannot insure that you will be put on a committee since that is the function of the chairmen.

In closing, I would like to thank you for listening to me and to ask for whatever help you will be able to give me.

MR. ERNEST J. MOORHEAD: This is under the heading of suggestions for things that need to be done that may go beyond what Jim already has; therefore, it is not exactly in the connotation of helping you Jim. I speak as a frustrated statistician who has strong belief in a particular kind of experience study that is not being undertaken and there seems to be no prospect of it being undertaken. I would like to begin this presentation by asking, Mr. Chairman, for a show of hands as to how many in this group are familiar with John Miller's quarterly disability newsletter?

MR. BARTLETT: Roughly half I guess.

MR. MOORHEAD: You do reasonably well. I expected the number to be smaller than that. John, for several years, has been developing experience figures on various kinds of disability contracts and printing them for the benefit of those who subscribe to his newsletter. He is doing something that would not otherwise be done.

Years ago I started a study that was somewhat similar in concept to John Miller's. I revealed it to this Society in an address that I gave in 1972 about the matter of the second Future Outlook Study of the then Institute of Life Insurance. I had, and continue to have, trouble with the well-known fact book of the now American Council of Life Insurance because they do not split their figures by line of business. All that we get, with very few exceptions, are aggregates combining group and individual figures. We also had trouble because of the shifting base of companies that make up the industry. Prior to 1972, I designed a study which I described in my paper as the 100 Company Study. This study was designed to follow the experience shown on page 5 of the annual statement, following by line of business the financial experience of the different lines for a constant group of 100 life insurance companies. Those 100

companies made up a very large part of the total operations of the entire industry. Part of the essence of this study was the constancy of the group; that it was the same companies as time went on. I was attempting to show a time series giving financial results about premium income, expenses, and gains from operations on the various lines of business. I had done it for the years 1960, 1965, 1970, and some years beyond that. I have had the greatest difficulty in getting acceptance for that concept and I consider the project distinctly controversial. The Institute of Life Insurance carried it on for a very short time. Without consulting me, as they did not have to, they expanded the study from 100 companies to 800 companies. They then told me it was too much work. Then, I got some help from LIMRA. It has been said that one of the objections to the 100 Company Study, was that it might be used to the detriment of the life insurance business. This is a risk with many other figures that you are going to be producing, Jim.

I want to put into the record that among the experience studies that should be considered by the Society are the continuation of the disability figures that John Miller is producing and a resurrection, if that is the right word, of the statistical studies that I have made in the past years. I am not expecting that to be debated this afternoon.

MR. BARTLETT: Thanks Jack, that is the very type of specific suggestions we welcome.

MR. ED LEW: I have a similar tale of woe to unfold over here. I have repeatedly and unsuccessfully pleaded with the Boards of Governors for the Society to develop a series of studies of the investment experience of life insurance companies, pension funds, and related institutions. The strange thing was that these studies were made during the 1930's at which time some managements conceded that the experience in investments was definitely unfavorable and ought to be studied. I am making this plea again because we may be coming into a period not dissimilar to that of the depression of the 1930's. It would be nice if we started collecting information which actuaries could put to good purpose before we come to some sadder experiences at which time we will have all sorts of other jobs to do. There are records which I would be glad to supply to Jim, of the half dozen or so studies made by actuaries during the 1930's of the mortality experience among mortgages, bonds, farm mortgages, and even housing developments. We are really not breaking new ground, we are simply returning to something that was done in a period of great need and distress. It was abandoned because it was felt that economists and investment people had acquired by the 1940's, 1950's and 1960's knowledge so that they could dispense with actuaries in this particular field.

MR. GARY CORBETT: I know there is a great need for research in this whole area of investment. I know less well who it should be done by, but I am very concerned that it be done by somebody. Research could be done by somebody else. It is not uniquely an actuarial problem. Is it part of the Research Policy Committee's job to encourage research in these fields, whether or not it is done by the Society? Is that part of the function of the Board, as opposed to Jim's position? Could you make any comments on that, Dwight?

MR. BARTLETT: I will give an example to illustrate the success that the President of the Society had in getting his way in this area. I got a letter from Robin Leckie who suggested that perhaps we consider publishing a

periodic report, which is comparable to a report that is published by the Canadian Institute of Actuaries on economic statistics. I thought the idea was a good one but felt that, instead of starting still another committee, we should take advantage of the existence of the Committee on Economics in the continuing education area which might consider this an appropriate task. That committee of course is not under the supervision of myself or the Policy Research Committee. I batted zero on that one. Perhaps we should put the suggestion made by Ed and Gary into a more concrete form. I will then go back in a more aggressive way and say that this is something we ought to be working on. I agree that this is an appropriate area of research for the Society.

MR. COWEN: I would like to ask Carl Ohman who is sitting in the audience to give some idea of what the C-3 Task Force is doing in this area?

MR. CARL OHMAN: We will have a chance tomorrow to discuss the work of the C-3 Risk Task Force on the study of the risk of loss due to changes in interest rates. This particular committee that I am chairing is concerned with the impact of changes in interest rates on the valuation of life insurance companies, both valuation of assets and liabilities. It is genuinely a practice type of research.

MR. BARTLETT: The Society and its membership is quite indebted to Carl and his colleagues on that committee for the activity they have undertaken. They are probably engaged in the single most significant piece of new research going on in the profession. I should also mention that Carl is a member of the Policy Research Committee and was the long suffering drafter of the Scope of Research Statement of the Committee. It went through at least half a dozen drafts as we struggled, particularly in this area of practice research that I described earlier. We are also indebted to Carl for his long forbearance with that paper.

MS. BETTY TOVIAN: I should mention that the work that LIMRA did in the 100 Company Study was not abandoned because it was thought that it would be to the detriment of the life insurance industry. It was stopped because the LIMRA Committee which oversaw the work was underwhelmed with the results. The problem was that they did not understand it or did not appreciate it. It was not that they felt that there was any danger in publishing the study. We do have the data and we have whole series that we have been publishing, splitting between stock and mutual, that I am not sure you have seen.

MR. JOHN COOK: Jim, I believe you spoke about a responsibility of reviewing the activities of the various experience study committees. It had been my impression that there was to be a publication of the objectives of the different committees in the recent reports. I thought it would be made available in time for this meeting. It would have been helpful if we could have had it, but could you tell me the status of the report at this time?

MR. BARTLETT: A booklet was distributed about a week ago from the Society's office that contained those one or two page committee reports.

MR. COOK: Is there any thought to forming a section on research?

MR. BARTLETT: None has been requested. No petition has been presented to the Board.

MR. COOK: How would you react to the idea? I think it would be good.

MR. BARTLETT: I would be delighted. If there were sufficient interest to support such a section I think it would say some very promising things about the Society's research activities.

MR. COWEN: Dwight, maybe you could give us some idea of the procedure for setting up a section.

MR. BARTLETT: The published procedure, which was established by the Board of Governors, requires 15 or 20 members of the Society to petition the Board of Governors for the right to approach the members to find what level of interest there is in forming a section. If there are sufficient interested persons, perhaps 100 or more, then the group can return to the Board and specifically ask it to authorize the creation of a section.

MR. JOHN MAYNARD: This subject is so broad that I think everybody who speaks on it speaks from a certain vantage point. My vantage point is that I have been on the Society's Committee on Valuation for a few years and have been listening in the background to their views on research. I am a fairly recent member of the AERF.

I like the breakdown of research projects: experience, theory, and practice. I am disappointed that the Society feels that it does not need to push the theory category; it can leave it up to individuals to proceed in that category. I suggest the Research Policy Committee take this thought into account and study the paper Professor Jewell presented this morning. He was saying that there are techniques of thoughts and theories in other disciplines which the actuarial profession has not fully made use of. I hope that the Research Policy Committee will take projects from Professor Jewell's paper as being very important and push them and not just leave these projects up to individuals. In this way the category theory will be pursued more strongly. That is one suggestion.

During the past year I have been listening to some academics at the University of Waterloo in Ontario. They have seven qualified actuaries on the staff at that University; more than any other university in North America. They are good and are interested in research. One suggestion is that there ought to be a committee of experienced actuaries meeting as an advisory body with this group at the University of Waterloo to help them enumerate projects for research and set priorities. This is a promising thought, but it gets into the questions of how the profession decides what is important and how it deals with problems including the financing and selecting of qualified people for the projects. If we were able to proceed with this advisory committee at the University of Waterloo, it would be to the benefit of the profession as a whole.

I am aware that a couple of years ago the Society's Committee on Valuation outlined two research projects to quantify, define, and learn more about C-1 and C-2 type surpluses. They gave it to the AERF which sent

the outlines of the projects to a number of actuaries on the continent but nobody took them up. Here is an example of some very important thinking that one committee of the Society blessed but could not carry through to the conclusion stage. How do you improve on this? The Research Policy Committee could come up with some priorities. If the committee were in line with the view I am expressing, they would say this research on surplus and contingency funds is very important. Then it becomes a question of how to get things done. The Policy Committee could report to the Society's Board of Governors approving the project. They may continue in several different ways. One way I would hope they would go is to the AERF. The AERF armed with this authority from the Board of Governors can talk with people and say the project is very important; here is the Society's report and the Board of Governor's approval. This should put them in a better position to raise funds and get people able to do the work. They could go out and talk with the people and not just send things out by mail.

MR. BARTLETT: While the Society may have been a catalyst in the original creation of the AERF, the AERF is an independent organization. If its Board perceives something as an important area for research, it does not need the blessing of the Society to pursue the subject.

MR. MAYNARD: Yes, Dwight, but it would be good if there could be agreement on priorities between the Society's Board and the Board of the AERF. This would facilitate getting research work done which would benefit the profession.

MR. COWEN: One of the problems is getting people to do the work. I am asking people who are interested in research work to let me know their field of expertise. Then, when a subject matter comes up, I can match people with the subject.

MR. ARNOLD SHAPIRO: I might mention that all the universities have a problem financing research. In addition to that, the problem of bringing together researchers and people who need research done is age old. I am not sure how to solve this problem. If more people came to research meetings that would be helpful.

MR. MAYNARD: How about the other professions? I have the impression that if the accounting profession wants to get some work done, they get it done.

MR. SHAPIRO: If the accounting profession wants to get something done, they pay some money. That is a real motivator.

MR. OHMAN: The discussion that we are having is very much at the heart of some of the discussion that went into the early stages of developing this scope of research statement. One of the key issues at the early stages of that discussion was what is the Society's role in research. Is the Society a research organization who's job is to set priorities, raise money, and get the job done? Or, is the Society's research function not to tell its individual members what research they ought to be doing, but simply to support and encourage their research activities? The Society would provide the facilities for research and the facilities for the discussion of the research.

The Valuation Committee's report in 1979 identified three risks that affect insurance companies, the so-called C-1, C-2, and C-3 risks. The committee identified the very great need for research in those areas and attempted to get the research done. We were not having a great deal of success in finding someone to do the research. The formation of the C-3 Risk Task Force came about in a different manner. Recognizing the long-term studies that were being done by the Society, the ACLI recommended an interim change in the valuation law. Those proposals had been adopted by the NAIC. In reviewing the proposals that the NAIC was considering, an actuarial advisory group recognized that there were problems. It was not problems with the valuation law that the NAIC was being asked to approve; it was problems with the existing valuation law. The problem was that in an environment of rapidly changing interest rates companies can hold statutory reserves and still be in serious trouble. It became clear that while the NAIC was adopting this law, they had to express a very real concern as to how actuaries were going to deal with the law. There was a real concern that rapidly changing interest rates were creating a very great risk for insurance companies, particularly companies that do not have reasonably matched assets and liabilities. Some way has to be found to measure that risk. All of a sudden there became several users who had a very strong financial interest in getting this research done. There was the financial stake in getting the new valuation law passed and a financial stake in the concern over the responsibility being placed on their actuaries' shoulders in signing actuarial opinions. There were several large companies who were willing to pay the price to have the job done. At the same time we felt it would be very important if the research, even though it was being done by four or five companies that had a real stake in it, were done under the aegis of the Society of Actuaries. It was at that time that several people approached the Society and asked them to form this task force reporting to the Valuation Committee. That is how this particular research happened to be done. Somebody was willing to pay for it; somebody was prepared to do the work; and, they all came together and the Society provided the facility in which the research could be done. This is a good illustration of how research gets done by the Society simply providing the facilities.

MR. BARTLETT: Carl has rendered a useful service in reading into the Record a statement of the life history of the process that led up to a very significant piece of research being done. There was clearly substantial economic motivation for some of our large institutional employers to see that the research got done. Of course, there are other areas of research which we as a profession might perceive as being important but in which our employers do not see an immediate economic stake. This is where we have a more difficult problem with the process of coming up with specific ways of conducting research. I am sure the Research Policy Committee and other mechanisms the Society establishes are not going to eliminate all confusion and disorder in this process, but hopefully we will make some progress.

MR. JOHN WOODY: I just want to respond briefly to John Maynard. There is some work that has been done on these risks and it is embodied in a book on adverse deviation which is available from the Society.

MR. MAYNARD: It is a great thing that Carl Ohman and his colleagues have stepped forward to do this needed research.

At the opening of his discussion Carl raised the questions: "What is the duty of the Society? What is their purpose in all this? Is it to say that certain things needed to be done or should that be left to individuals?" The Society should say what research should be done. The Society is in a very special position. It supervises and maintains the educational process on which the standards of actuaries depend. If the Board of Governors feels that something is needed to improve the educational and examination process and the resulting standards, I think it is up to the Board to arrange for it to be done. It should not be left up to individuals.

MR. COWEN: That is true. But, the membership must come forward and let the Society know what they desire. The Board must hear what needs to be done.

MR. SHAPIRO: I might mention that financing at a university does not always mean paying a professor. Quite often it means funding a student. The students do all the work and the professors get all the credit.

MR. FRANCISCO BAYO: My comments are about the nature of research per se and about what we are supposed to do.

I hear one view that research is to be performed by individuals and should be left to the individual. I also hear another view that research needs to be institutionalized and that appropriate structures should be created in the Society of Actuaries for this purpose. The two views seem to be expressed as if they were mutually exclusive, but my feeling is that they are complimentary.

If research is to be conducted, somebody will have to do it. We should keep in mind that research is not conducted by a committee, but by the individuals in the committee. However, it is well to recognize that research is, to a large extent, a reflection of outlooks and attitudes. It is the result of a commitment to search for a higher level of truth and of the belief that this search will ultimately be of help to mankind in general. These attitudes, outlooks, and beliefs need to be nurtured and cultivated in part by other individual researchers, but also to a significant extent by the policies of structured institutions. I hope that our new Director of Research, Jim Cowen, will view his job as including the difficult but important task of continuing to develop within our Society the atmosphere that is conducive to more and better research. We should all be committed to such an ideal task.

MR. BARTLETT: Just having left the Social Security Administration (SSA), I would like to comment that the literature produced and made public by the Office of the Actuary (OACT), is a form of applied research. I think it is one of the ornaments of our profession and certainly Frank deserves a major share of the credit for the creation of that literature.

MR. COWEN: Having come from the RRB I think that for pension actuaries in particular the material produced there in the past has been as good as anything produced in the country. They have published all kinds of mortality, disability, retirement, and termination rates. Right now the RRB and SSA are about the only two places that publish remarriage tables. I know the casualty actuaries are interested in those for workmen's compensation. I am sorry to hear that the government is cutting back a little on their research. The administration's economy drive is really going to hurt some of the research done by the government.

MR. CECIL NESBITT: Let me toss out a definition of research. I regard research in a very broad way as the recognition, organization, and communication of information and ideas. The theoretical part is more concerned with ideas and the applied part more with the application of those ideas.

I want to mention the new actuarial textbook which is incorporating research of the last 10 or 20 years and also some very recent research. The textbook will incorporate ideas from Europe. The AERF is in the process of having a textbook written on the distribution of individual losses. It is about two-thirds completed. These come under communication as a form of research.

Dwight referred to the work of the Office of the Actuary, Social Security Administration. For quite some time I have been trying to formalize some of that work in a monograph on actuarial projections for Social Security. Professor Jewell this morning referred to modeling. One of the important attributes of modeling was that it provided a means to communicate to other professionals what we are doing. I regard this monograph as a means of bringing together some of the very important work done by the OACT.

In a subcommittee chaired by Jim Hickman, we are trying to define a project which will conduct a survey on trends in retirement ages under various types of retirement plans. Another request for proposal which is about to go out is to collect information on disability experience--mortality, remarriage, and possibly recovery. A first step will be the review of experience studies which are available. The second step will be to suggest a means of adapting standard tables to the particular expected experience of various classes of workmen's compensation cases. Part of the study will be similar to the medical risk book written by Singer and Levinson. That took ten years to complete but this disability project is not timed to go nearly as long.

The title of next year's actuarial research conference will be "Estimation of Mortality and Other Decrement Rates." It is timely for us to look at the methods used in other disciplines--medical, statistical, engineering--in the estimation of failure rates.

There is considerable work going on and a great deal of work that can be organized for the future. AERF does try to define the projects, get people to do them, and get funding for the projects.

MR. LEW: We are stretching the meaning of the word research perhaps unduly. I would roughly define research as developing new knowledge or techniques. Going to the library and looking up what someone else has done stretches the word research. Communication is a very important endeavor but not one that I would dignify with the term research.

MR. COWEN: Cecil was referring to the fact that after the research is done you have to disseminate it. This is one of the problems that many of the theoreticians are having. There are a very limited number of journals in this country in which they can publish actuarial research. Many are going overseas to publish.