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THE CANADIAN IN THE EDUCATION AND EXAMINATION SYSTEM

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Are the special needs of the Canadian actuary being served by the E&E system? The E&E Committee recognizes that Canadian actuarial students have nation-specific needs and interests that must be met by the E&E system. A knowledge base specific to Canadian law and practice supplements the knowledge base common to all actuarial students. The E&E system relies on the input and direction of Canadian specialists from all areas of actuarial experience. Thus, Canadians determine the education which Canadian students receive from the E&E system.

This session presents the methods by which the E&E system strives to meet the educational needs of Canadian students, and allows discussion as to whether the effort is successful and sufficient.

MR. MICHAEL D. DEMNER: The guiding principles of the education of and qualifications for actuaries were distributed to Canadian Institute of Actuaries (CIA) members recently. These principles will form the basis for the future Canadian E&E system. They talk about, amongst other things, the desire for a completely bilingual E&E system; the requirement that new actuaries be examined on all actuarial topics including, for example, casualty actuarial science; and also the desire for more involvement by our universities in the E&E process. I expect to present a final set of these principles to the CIA council later this year, and this may be one of the last opportunities to comment.

MR. LINDEN N. COLE: E&E is a major part of my job. It is, in fact, the part I get paid for. Mr. Warren Adams was the first Director of Education of the Society of Actuaries (SOA), and many of the good things that have happened were due to his initiative.

My title at the SOA is Director of Education. This is a misnomer since I do not "direct" anything in the E&E system. The direction comes from the Education Policy Committee by the Board of Governors, and the day-to-day decisions are made by the E&E Committee general officers. My function is to provide staff support to all these different groups. The ultimate authority lies with the Board of Governors.

My responsibilities cover both the United States and Canada. This is as it should be, since the SOA is a binational organization and has been so from the beginning. The predecessor organization in 1889 had people who came from Toronto for the organizing meeting, as recorded in the first edition of their Transactions.

The present course of reading contains specifically Canadian material on Parts 6,7,9, and 10. Part 6 is, to some extent, a stage-setting exam for the later Fellowship exams. It introduces people who now have all their theory to the real world. Everybody has to study everything on Part 6; both Canadian and U.S. students study both Canadian and U.S. social programs and are tested on them. Parts 7, 9, and 10 are different, because there are differences between Canadian and U.S. practices. There is quite a bit in common with differences in subjects like law and taxation. Essentially, Canadians are examined on Canadian practice, and U.S. students are examined on U.S. practice. It has been that way for over twenty years, with different Canadian and U.S. material where there are differences in practice.

To summarize the exams, everybody takes the same Associateship exams --the foundational theory; everybody takes the same Part 6 exam--financial security programs in North America; everybody takes the same Part 8 exam--asset and investment management; and there are different U.S./Canadian exams for Parts 7,9, and 10--the practice-oriented examinations.

Canadians write the questions on Canadian subjects, and Canadians grade the questions on Canadian subjects. Essentially, Canadians do all of the work related to Canadian practice, as a matter of E&E Committee policy.

There are some radical new ideas being discussed under the names "Flexible Educational Methods" or "Flexible Educational System." They are not necessarily radical to the rest of the world, but they seem radical if you have been with our system for a long time. None of these things have been decided. If you hear rumors that we are making radical changes next year, that is a mistake. Discussion and decision are different, and we are only in the discussion stage now.

There are some problems with the present system. Not that it isn't working well--we are wondering if we could do better. The system we presently have is rigid. We have ten exams, and we force everything into one exam or another. Sometimes you get some rather odd results. For example, Taxation of Financial Security Programs on Part 6 is not really appropriate for the first Fellowship exam, but that is where we had room for it. There are also problems with rigidity because of our desire to keep everything parallel. We want the pension track to be parallel to the life insurance track. This is because we allow our members to switch back and forth between tracks if they want to. Whether that privilege makes sense or not is something we are also discussing. Maybe we should force everybody to stay in a track once they start. But at present, you can switch back and forth between pensions and insurance. Since that is true, we must have parallel structures by subject. But what we have is a logical sequence of

subjects for life insurance. Then we force the sequence of subjects for pensions into that structure, and it does not always hang together perfectly. Similarly, in the past I think that we had a U.S. sequence of subjects more than a Canadian sequence, and to some extent we forced the Canadian sequence to be parallel to the U.S. sequence. The results are not as far out of line as for the pension subjects.

We will have that kind of problem soon, if the CIA decides that it wants a casualty examination. We could introduce this into the SOA series of examinations, I think, with cooperation from the Casualty Actuarial Society (CAS). We could not do so, however, if we must have U.S. and Canadian sequences parallel. Casualty insurance in the U.S. material will not be required of U.S. SOA students, at least not for a while. Regulatory practice in the two countries is increasingly diverging. The Canadian valuation of life insurance reserves is very different now from the U.S. valuation. U.S. regulations tend to be more detailed and it gets harder to keep the Canadian and U.S. tracks parallel.

Finally, we must talk about educational effectiveness. Our present method of education is to tell people what to read, and when the examination will be. That is all. The threat of the examination is supposed to motivate students to do their reading and learn the subject material. We have been selecting very good people from observing the people coming through as new FSAs. As a selection mechanism, I think that our system is not too bad. The word is around, however, that particularly for some subjects, there may be more effective ways to educate (like having a teacher in the room or using computers). A good example is the applied statistics subject on Part 3. We teach statistical theory on Part 2, which I think is appropriate. Part 3, however, is supposed to be "how to do it." And yet, we don't make you do it. We just give you a book and tell you when the exam is going to be. You ought to be sitting in front of a personal computer with a statistical package and a project, having to take data and work with it, and learn statistics by getting involved with it. I took the Part 2 exam years ago and never used statistics in my job later because I didn't know enough to do so. I don't think this means that statistics is the wrong subject. It means that I was not educated properly. The applications in which I could have used statistics went past me without me recognizing them

Flexible Education would express requirements for Fellowship in terms of credits or credit hours, rather than a number of exams. It would look more like requirements for an MBA program or a graduate degree. We might still give examinations for every single subject, so it would be possible to attain Fellowship just on SOA examinations, but under a flexible system, we would be able to use better educational methods where appropriate. I have already suggested that there are some subjects where self-study is not effective, and a university course would be better. We should obviously give credit for university courses in such cases. If you go to Laval University and take an applied statistics course, and you have to use computers and do a project, and the teacher helps you understand it and gives you a critique of your work, this is better education than reading out of a book and doing our exam.

We might even require some university course, having no other way to get credit for a particular subject than by taking the course. Corporate modeling would be wonderful for a life insurance FSA to know, and I do not think that you are going to get that out of a book.

We also could give credit for educational programs of other organizations. Home Office Life Underwriters Association (HOLUA) gives good examinations for selection of risks. The Chartered Financial Analysts in the U.S. give good examinations now for investment management, asset selection, and so forth. The CAS has good material on credibility theory which is directly relevant to group insurance. If we were more flexible, with a system of required and elective subjects, we could give credit for these. We could give credit for management courses to some extent.

We are dreaming at this stage, but these are some of the different possibilities that we can see. The first step towards moving to a Flexible System would probably be to cut the present examinations from ten multisubject examinations into many single-subject examinations. That would be harder for us to manage administratively, but we could then begin introducing some innovation into our educational methods. Then, after a year or two, we might switch to a system of credits instead of exams.

Let me repeat that none of these ideas have been accepted. These are not decisions but only dreams. If you would like to get in on the planning of this, let us have the benefit of your ideas now because this is the time when the different ideas are being formulated. Don't forget that the objective is better education. We do not want to change our selection standards, since we are selecting good people, but we would like to have them better educated as they come through with their FSA. If you have ideas that you would like to share with us, you can send them to me at the SOA office. I will get them to the task forces that are at work.

MR. GASTON PARADIS: I will speak on the role of Laval University in Canadian actuarial education.

Actuarial science at Laval University goes back to the 1950s when the program consisted of a Bachelor of Commerce with a major in actuarial mathematics. The mathematical content of the program prepared the students for the examinations of the SOA and the remainder of the courses prepared the future actuary for his role of administrator since the great majority of actuaries at the time worked for insurance companies and, sooner or later, held management positions in the administration of the company.

Towards the end of the 1960s the actuarial program committee at Laval University, bearing in mind the evolution that the profession had undergone, decided to remove itself from the Bachelor of Commerce program and to set up its own specialized program in actuarial science which was first awarded in 1971. While maintaining in the program the basic courses deemed essential for the training of an actuary, such as economics, computer sciences, accounting, finance, and law, this made

it possible to introduce advanced courses which are specific to actuarial science and also to introduce into the program courses in casualty insurance with the objective of preparing the students for the examinations of the CAS.

Another fortunate consequence was the launching in the mid-1970s of the Master's program in Actuarial Science, which requires a thesis and enables the student to go into greater depth on subjects such as the theory of risk or Social Security or others. Because of the irresistible attraction of the profession on our graduating students, the Masters program, which does not focus on passing the examinations of the SOA, attracts only a few students each year. I shall therefore focus on the Bachelors program.

The specialized Bachelors program in Actuarial Science has a total of 96 credits of which 60 are compulsory, 30 are optional and 6 elective. A semester/course generally corresponds to three credits whereas some are worth four. A student who wishes to conclude his program in three years takes, on average, five to six courses per semester. Amongst the compulsory courses, we have to make sure that the student acquires the basis deemed essential for the training of any actuary: micro- and macro-economics, computer science, accounting, finance, law, and obviously mathematics including analysis, linear algebra, probability, statistics, financial mathematics, numerical methods, operations research, and, of course, life contingency functions and mathematics of risk. Furthermore, three qualitative courses in life insurance, casualty insurance, and group benefit plans are part of the compulsory list. Added to this list are the optional courses which, to a great extent, prepare the students for Parts 4 and up of the SOA or the CAS. In addition, the student has to take two or three additional courses either in statistics, finance, computer science, or economics. Finally, the six elective credits must be taken outside of the program and serve to contribute to the student's general knowledge.

At the conclusion of his program, the student who has taken the appropriate optional courses should have to his credit the first five examinations of the SOA or the CAS. The normal schedule for a student preparing for the examinations of the SOA or the CAS is as follows: Parts 1 and 2 in the May session at the end of his first year; Part 3 in the May session at the end of his second year; Part 4 in the November session of his third year; and Part 5 in the May session of his third year. The courses covering the material for the first three examinations and part of the fourth are compulsory in the program and the courses for the other examinations are optional. Furthermore, the compulsory courses are taken in the first and second years and most of the optional courses are taken in the third year. The great majority of the students complete their 96 credits in three years or six semesters, although a small number of them take seven or even eight semesters to complete the program.

Although Laval University is a French University and the teaching there is exclusively in French, it is assumed that the students who take the program are reasonably familiar with English and that they are sufficiently able to read and write in English, although they cannot

necessarily speak well in English. Their knowledge of English is quickly tested because many of the reference books used by the professors are English. This enables them to become more familiar with English and decreases the disadvantage that they have in relation to their anglephone colleagues from the rest of Canada and the United States when they take the examinations of the SOA or the CAS. Furthermore, the fact that the SOA now gives the examination questions in both languages (at least for examinations 6 and up in the Canadian part) permits the candidate to submit his answers in the language of his choice ruling out a great many of these language difficulties. The main difficulty remaining for a francophone is that he has to study in reference material that is drafted in English for the most part. I am told that the answers submitted in French are first translated into English and then corrected like all the others.

Let me now give you a few statistics on the actuarial students at Laval. The number of new students enrolled in the program was roughly between 60 and 80 in the years 1975 to 1982, with a rate of diplomas awarded standing between 50 and 60 percent leading to an average of 35 to 45 graduating students per year. In 1983, the number of new enrollments suddenly increased to 95, and for 1984 that number was 120. It is encouraging to note that the quality of the candidates is being maintained despite their scoring numbers.

I believe Laval has played a primary role in the field of actuarial education in Canada. Laval has imposed on its syllabus courses in economics, finance, accounting, law and computer science to the extent that those students who are not successful in these courses must leave the program. In fact, we note that employers attach a great deal of importance to this when they recruit our graduates. Laval was the first university in 1968 to have taken the risk of developing a specialized program in actuarial science crowned by a specific diploma in Actuarial Science. Laval took the risk, as of 1970, to introduce into its program compulsory and optional courses in casualty insurance. We were not at all sure then that the employers would recruit our students, although this proved to be a fortunate decision. Laval set up a Masters program with a thesis requirement around 1975--a program which is not focused on writing the examinations of the SOA or the CAS.

Outlook for the future

We know that research and quality teaching go hand in hand. In the long run a university program is only viable if it is well-supported by structured research activity. A good graduate study program does not only contribute to the development of science but has proved to be a pull of attraction and support for teaching and resourcing which contributes to improving the teaching staff. One of the means by which we attract new graduates from Laval is promising financial aid supplied by our institution to graduates who want to take the SOA and CAS examinations and to undertake doctoral studies or Ph.D. studies. These candidates, in return, agree to undertake a teaching career at Laval and would be precious support to the development of research and graduate studies.

Discussions are now in progress on the possibility of introducing an alternate route consisting of a system of exemptions to certain examinations of the SOA or CAS in exchange for specific credits obtained by the means of selected university courses. By confining this alternate system to a waiver formula, this may produce as many disadvantages as advantages. In the eventuality that this system is adopted, we believe at Laval that we should continue to encourage our students to write all the exams. In any case, our courses largely cover and go beyond the material for those examinations, and we shall continue to evaluate our students in accordance with standards that are as demanding as those of the SOA or the CAS.

We believe the course of study for a young Canadian to take who wishes to become a member of the CIA should be as follows: (1) He must first obtain a Bachelor's degree from a recognized Canadian University, the program being certified or recognized by the CIA. (2) He must do a compulsory training program in a given insurance company or in a consulting actuarial firm under the supervision of senior actuaries and, at the same time, pursue professional studies sanctioned by examinations administered by the CIA. Such an approach would better profit the university infrastructure, for which all taxpayers already assume the costs, and would better define the responsibilities of the universities versus the professional corporations in the training of actuaries. We feel that the basic general training of future professionals is better assured within the academic setting and the university system and will permit better preparation in view of the future developments of equipped actuarian science. But we recognize that the CIA is better to dispense the specific professional training of the candidates and to test their knowledge by means of appropriate examinations covering the professional aspects of the syllabus, that is, the equivalent of Parts 4 and up.

This solution, which we believe would be ideal, might unfortunately take a certain amount of time before it is sanctioned or approved by the members and becomes part of the educational system in Canada, in view of the natural resistance that people have to change and in view of the fact that the present formula has up to now reasonably well-served the purposes of the CIA. In the meantime, we are expressing the wish that the minimum requirements of the CIA for these candidates for Fellowship be a Bachelors degree from a Canadian university as well as the ten examinations of the present syllabus with the provision that such a university degree compulsorily would include a minimum of basic courses from each of the following disciplines: economics, finance, accounting, computer sciences, and law over and above the traditional courses in mathematics, of course.

MR. ROBERT J. MCKAY: The E&E system itself consists of between 300 and 400 members. It may even be larger as from time to time we have task forces studying various issues. I spent the last few minutes adding up the names of E&E members. There are 330 people listed of whom 82 reside in Canada. That's apparently about 25 percent. Incidently, the ones who are not Canadian are not automatically Americans --at least one Greek actuary is included.

There are many different titles or designations and functions among E&E members. We have general officers who oversee the day-to-day activities of preparing the exams and maintaining study material. We have exam chairmen who prepare the exams for review by the general officers. They are probably the most important part of the whole structure. When they do a good job, we have excellent exams, and we hear good things from students. Task force members are solicited when there's a specific issue to be addressed such as introducing a new textbook on actuarial or pension mathematics. In this case, we set up a task force to review the material, to determine if it is appropriate, and if it is introduced to determine what changes should be made to the rest of the syllabus.

Item writers are volunteers who write questions. They draft a question, and the exam chairman reviews it and distributes it to the committee for comments.

Exam consultants are individuals who work with each exam who usually have not come up through the E&E system. They are expert in their particular field. After a committee has prepared a question that represents the study material, the exam consultant will review it to make sure that it is a real life question, that the study material is still up to date, and that the question makes sense.

Education consultants have a similar role to exam consultants. Their job is to review the study material and help keep it up to date. They point out where material is no longer appropriate or relevant because of legislative changes and changes in practice. Part committee members work on exam committees; they could be item writers, they could be essay question writers; they could be actuaries who mark the questions. The education policy committee consists of individuals representing several actuarial bodies--the SOA, CIA, American Society of Pension Actuaries (ASPA) and CAS. They oversee the E&E process and set the policy that the E&E Committee implements. The Board of Governors of the SOA and the similar bodies from the other actuarial groups oversee the Education Policy Committee. The Board sets the broad educational guidelines. It usually doesn't get involved in any of the day-to-day activities, but will make the final decision on very important topics, such as the future education system.

The Education Policy Committee works with the Board along the way and comes up with recommendations. The final decision for important matters is made by the Board of Governors, for the SOA, or by the Council for the CIA.

Because there's a number of different actuarial bodies represented, there are liaisons to make sure that some of the unique issues, such as some of the Canadian proposals for the alternate route, tie in with what the other groups need and want. Mr. Demner is an example. He is the liaison between the CIA and the SOA and the other bodies.

Looking at it another way, the hierarchy or the structure is as follows: At the top, we have the Board of Governors of the SOA and the

Council of the CIA giving the general overall direction and philosophy and reacting to certain important proposals or changes.

The Education Policy Committee reports to the Board and meets two or three times a year to review the issues. One major issue today is the education of a pension actuary. The material is not as good as is available for the other exams and lines of study. Part of the reason is that good pension actuaries are very busy these days and don't have time to sit down and tell their competitors how to do a good job. But there have been some proposals on trying to work with some of the major firms and ask them to help support improvement. The E&E Committee itself splits into a couple of different committees. The Education Committee's purpose is to maintain and update the educational material, introduce new text books, review study notes, and revise or discard them where necessary. The Examination Committee consists of those people who actually test the educational process to see if people are meeting its requirements--if, in effect, they have been educated in the subject of the particular exam. The Examination Committee consists of several exam committees covering each separate examination. That's the big picture. A typical fellowship exam committee at the top will have a part chairman whose job is to manage the entire exam preparation, review, marking, setting the pass mark and so on. The largest number of people on one committee is about 71 on part 7, so managing that is a fairly large responsibility. The work is spread out, and the exam is typically divided into a number of sections. Part 7 has a vice chairman in charge of pensions and a vice chairman in charge of insurance or individual. You probably will have a vice chairman in charge of multiple choice questions: responsible for putting all the questions together and having them sent out to the exam committee to be reviewed and put together in a proposed exam and brought to the general officers for final review. Typically, in a case like this, where there is a specific Canadian exam, Canadian portions of the exam have a Canadian vice chairman to handle that entire function. Of the ten exams, I believe two have Canadian chairmen and the other 8 have Americans. Each of the four vice chairmen in this case has members of the Part Committee reporting to them. There may be in some cases 20 or 30 people reporting to that individual. Their jobs would typically be preparing exam questions. Committee members are asked to draft initial questions. They are circulated among members of the committee for their comments. The chairman or vice chairman will then get those comments back, prepare a draft exam for the November exam, and that will be reviewed at the end of July. All of the exams being written in November will be reviewed then by the general officers. After that, the exam vice chairmen go away and make minor revisions to the exam and give it to the SOA office at the beginning of September. It then is distributed to the test centers all over North America and the world. In November, the exams are written. The papers are marked, and at central grading, the committee gets together to review the papers again for candidates who are close to the proposed pass mark. The chairman makes the ultimate recommendation of the pass mark. The general officers review and may make minor changes. The General Chairman signs the pass list in early January, and we are well on the way to the May exams.

The one thing I didn't mention is that these 300 or 400 individuals are all volunteers. We also rely heavily on the support of the SOA office. Individuals like Linden Cole, Bernard Bartels and Marta Holmberg, and a number of others supply full-time help to keep the whole process running.

MR. HARRY H. PANJER: I would like to take a somewhat broader perspective on the role of universities in the education of the professional actuary in Canada. I've been involved in actuarial education for 12 years, currently at the University of Waterloo. At Waterloo, we have a faculty complement of eight Fellows of the CIA. This is one of the largest numbers of actuaries in any academic institution in the world. We have programs in actuarial science at both the undergraduate and graduate levels. We offer courses on a wide range of actuarial topics including taxation, financial reporting, pensions, credibility theory, loss reserving, modern financial theory, asset management, medical underwriting, and all sorts of things. Students who graduate from our undergraduate program have the background for at least five of the examinations of the SOA or the CAS and have also taken a broad range of courses covering topics which are included in later examinations as well. We believe that we offer one of the most extensive actuarial programs of any institutions, not only in Canada but in the world. Although Waterloo and Laval have large actuarial programs, they are by no means the only universities in Canada offering actuarial education. There are a number of other institutions which have actuarial programs and professional actuaries on their full-time staff. They include the University of Manitoba, the University of Toronto, and the University of Western Ontario. Although I do not have figures available to me, I think that the majority of actuarial students entering the profession are graduates of these five programs. This is in marked contrast to the situation in the United States where only a relatively small percentage of students come from universities offering actuarial education up to the Part 5 level.

This is perhaps the first of several significant national differences between Canada and the United States. Another important national difference is that, in Canada, the designation Fellow of the CIA is written into law. Anyone certifying financial statements of insurance companies must be a Fellow of the CIA. There is only one definition of actuary in Canada and that is "Fellow of the Canadian Institute of Actuaries." Canadian actuaries value that single designation of actuary because it maintains the profession as a single entity without the fragmentation that we see in the United States. Furthermore, it allows one to practice in a number of areas without having to requalify. If we believe that single designation is desirable, then it follows logically that it is essential that all actuaries in Canada be given a basic education in all aspects of actuarial activity. That includes life insurance, health insurance, pensions, and property and casualty (P&C) insurance. The current examination system does not meet this objective since life and casualty actuaries have separate examination systems. Each system is independent of the other, and neither recognizes principles or practices of the other. Here universities can play an important role in the education of actuaries in Canada. At the University of Waterloo, all undergraduates can receive some background in all areas of practice.

We believe that undergraduate actuarial students are not in a position to choose between non-life and life areas. Furthermore, there is a great need in Canada for P&C actuaries, and it is a duty of university programs to bring this need to the attention of students and to encourage students to enter this area of practice.

I believe that universities are the best resource to provide education to the actuary in Canada. Until the Guiding Principles for Education and Qualification of the CIA were released recently (they haven't been adopted yet), the university programs received no official recognition by the profession in Canada. It appears that the CIA is beginning to recognize the value of formal education. With the strength of university programs in Canada, we are in a position to consider providing alternate mechanisms for the qualification of actuaries other than the traditional route of informal education or self-education in the passing of examinations of the SOA and the CAS. I do not believe that anyone can dispute the fact that university programs such as the one at University of Waterloo can provide excellent education to prospective actuaries. This is of direct benefit to the profession as a whole. I believe that like most professions, ultimately the actuarial profession should require that all entrants to the profession have a degree from a university providing an accredited program in actuarial science. This would elevate the level of actuarial science in the university context to that of professional school status as is the case with medicine, law, engineering, and, to a certain extent, accounting. After all, we are professionals, and if we wish to survive as a profession, we must ensure that the next generation of actuaries is as well-educated as possible. Returning to the SOA, we at the universities welcome the discussion of the flexible education system. It recognizes that the education of the actuary can be broked down into a large number of subtopics. This is exactly the way in which university program are structured. Students take many courses during their three to five year stay at university and pass examinations for each course. The thing that seems to be missing in the discussion of the flexible education system is the role of universities (at least to a large extent). A formal education in a university context given by experts in the field is better than self-education done on a part-time basis in the evening after working hours. Consequently, I believe that the flexible education system must naturally lead to a university-based educational system. After all, the flexible education system is being designed to look like a college catalogue. Rather than having a simulated college system, why not have a real one? If one agrees that formal education is better than self-education, then one must conclude that university-based programs will provide a better product than the current self-education system. Consequently, we welcome the initiatives of the SOA in these directions. I also believe that professional school status for actuarial science within universities will make the profession more attractive to bright students. This has already been demonstrated in Australia where Macquarie University is the only university offering actuarial education. Students in Australia write uniform final high school examinations. The top-ranked students almost uniformly enter the faculties of medicine and law. There is a single exception in Australia, and that is actuarial science. Some students who would otherwise have gone into medicine or law now go into actuarial science

at Macquarie University. If actuarial science had the same professional school status in Canada, I'm sure that our students would be of even higher quality than they are now. This would ensure that some of the best brains would be ultimately put to use in solving actuarial problems, and this would naturally increase the ultimate survivability of the profession in the current context of increased competition between professions. In conclusion, I believe that university-based actuarial education is not only good for universities, it is more importantly good for the profession and society at large and is inevitable.

MR. JACQUES CLOUTIER: I'm vice president of the CIA. I would like to make my remarks on the subject of bilingualism in the exams. Mr. Paradis mentioned earlier that only a few of the students avail themselves of the possibility of writing the examinations in French. This was perhaps true up to a few years ago, but it would seem that more of these students are indeed availing themselves of the possibility. Lucie Cossette, who is responsible for the subcommittee on bilingualism in the examinations of the CIA told me that it's quite an enormous task to correct examinations written in French. First, the answers have to be translated from French to English before they can be marked. It's enormously difficult and tedious because there's always the fear that, in translating the answers, the meaning is changed and also because the number of people who agree to work in the system is relatively small. So I would like to launch a special appeal to the French-speaking members of the CIA to become more involved in the education system and to sit on the various examinations committees so that we might be eventually in a position to have the necessary manpower to correct examinations written in French. Bilingualism is an important fact--a major fact--for the CIA. I believe that the SOA is ready to cooperate in depth with us, but the manpower has to come from Canada and particularly from the French-speaking actuaries of Quebec.

MR. DEMNER: You are quite right, we do need more support, as much support as we can get from the English and the French communities in Canada.

MR. CURTIS E. HUNTINGTON: I serve as General Chairman of the E&E Committee of the SOA. Those papers that are submitted in French are currently graded in English, but if they are borderline papers, they are reread in French by French-speaking actuaries to make sure that the grades that have been allocated to those papers are adequate. Thus, we go out of our way on borderline papers to make sure that they are being graded in the language that they were submitted.

MS. LUCIE C. COSSETTE: Because we have noted this year a considerable increase in the number of students answering in French, we would like in the future that the first correction of the exam be done in the language of the student. For the student who is a borderline case, his examination will be translated and then corrected by anglophones also.

MR. BRIAN R. NEWTON: I am senior actuary with the Ontario Superintendent of Insurance. I would like to make a few observations as a consumer of actuaries in two senses. First, we have a program by

which we regularly employ co-op student, so we sample some of the students coming through the process. Second, we have few life companies, and we have a peculiar standard alien to the federal standard of which some actuaries seem to be totally unaware. When we come to casualty companies, we haven't yet followed the federal standard or that of Quebec with respect to requiring certification. We are in the process of getting whoever calculates the reserves to state how they did them. Then in selected cases, we are requiring certification when we think there is some doubt about the methodology. We are trying to establish a standard first, and then when we set up certification, the certification will state what standard we are expecting. At the moment, it would be impractical to expect FCIAs to certify. To allow non-FCIAs many of whom are certifying or calculating to certify, we need to have a standard to give them.

One of the things that makes me a little bit impatient is that the students have very little training in actuarial matters as I see them until late in their course of study. The early parts of the university courses are concentrating on general mathematics, and it seems to be only at the later parts that the students actually start familiarizing themselves with insurance. When I interview students, I ask if they know the difference between an insurance company, a bank, and a trust company. Fifty percent of them say they don't know because they haven't reached that part of their course yet. There should be some earlier background on financial institutions generally. The SOA still has a general mathematics exam, and I seriously question whether that is necessary. It seems to me that people starting the exams could be told that a certain background in mathematics is required, and that special mathematical techniques could come up in the reading matter where appropriate. I don't see any point in grouping it in the initial exams so long as people have fair warning that they're going to have to have a capability. That would enable the courses or the exams to get down to the applications more than probability and statistics. I notice that the CAS Part 5 provides excellent coverage of all the varieties of policies that one meets in casualty work. The SOA doesn't seem to have anything equivalent. I don't think that policy design is so extensive in life work, but I have come across cases where it has been evident that the life actuary certifying the results has never even read the policies. It surprises me that we have people who are deeply technically competent who commit elementary gaffs by assuming that some computer system has taken care of every possible liability that might arise. A similar situation recently occurred for a casualty actuary who certified some reserves. He disagreed with the company and said that the reserve should be higher and then just as we were cross-checking the data we asked him which currency his liability was in. He didn't know. He said it was whatever was the currency basis the company used--which happened to be a mix of currencies. I believe a caution to people to scrutinize their results is missing in the education system. We're getting people who take data and process it by rote methods. I would look for more emphasis on the data, maybe more education on selecting methods and even emphasis on inventing new methods.

We are trying to look into the practices in each country, but if you get too specific in the legislation, then you are going to have rote

education again. It is nice to present various contexts to people, so they can think: what does this method take care of? what does this legislation take care of? It would be comparative so that they can develop principles and be able to adapt as things change. Last, I would suggest that we have to move as rapidly as possible to a special CIA casualty exam for two reasons. We must give the members of the CIA who are already Fellows a method of testing themselves and showing that they have some background in Canadian casualty work. A lot of life actuaries are having to take it on. There is a severe shortage of casualty people, and problems arise because assumptions made in pension funding are applied to a health insurance company. Also, just for Ontario, we have evolved a rate regulation process in a special case for automobile insurance high risk plans. Over four to five years, initial submissions made to us followed the lines that you see in the text of the CAS. By working with the actuary for the facility association, we have spotted various deficiencies in that methodology. We have discussed them, and there have been innovations. Probably now in Ontario what would be expected to be included in a filing already deviates in two or there material senses from what the CAS says goes into a filing to a U.S. state, where it may not be subject to such critical scrutiny. Also we've had innovations in workers' compensation. The CAS exam has a great amount of material on workers' compensation which doesn't apply in Canada. A few years ago, a serious deficiency arose due to the blind use of the accepted U.S. method. I believe the actuary has introduced in response to the Ontario Board a totally innovative method. I think Canadian actuaries should be aware of that. Again a question here is the clientele. How many FCIAs are going to be doing workers' compensation work? There'll be actuaries with the Ontario Board. They may be consulting actuaries doing back up certificates, but they should be aware of special approaches that have been developed in Canada. Again the whole problem is somehow to be specific to the area you're working in. I certainly remember when I came from England and started signing actuarial certificates in Canada. I became alarmed when I realized that I was supposed to have a body of knowledge of assumptions which wasn't stated on the certificates. I personally welcomed the move to make people aware of Canadian practice. So we've introduced either the SOA Canadian section or the special Canadian exam. We've reached the point where we do need that for casualty topics as well. Our duty is to get the few people in Canada to put together the special material and to disseminate it to the other actuaries. That may mean that there has to be a flurry of paper writing first. There is an opportunity to spread the knowledge of the special Canadian techniques. Then I think the exam must follow.

MR. DEMNER: We are concerned about the casualty side of things here in Canada, and the CIA would like to add casualty material to the examination system. There are some problems in trying to add material without taking away other material and overburdening the student, but we are recognizing that we need to have casualty material. It needs to be Canadian material, and fortunately on the casualty examination syllabus, there really isn't much Canadian material, if any.

MR. PRESTON C. BASSETT: I am the President of the SOA. The CAS is enthusiastic about the SOA's explorations for flexible education which might include having a series of examinations that will follow along the casualty line. Thus, the flexible exam approach would cover pensions, life, and we hope it would cover casualty and health as well. There may be a general track if students need it. The early exams would be split into parts, and they would be pretty much compulsory. The Fellowship exams probably would require a selection of a course, or a track, and the student would be required to take a certain number of exams in, say, the pension track. If you took the casualty track, you'd take courses in the casualty area and then electives on top of that. We hope that this may answer some of the problems and may take care of the Canadian casualty questions as well. We have U.S. and Canada pensions, U.S. and Canada life, and we could easily have a U.S. and Canada casualty and health as well.

In regard to the problem of the actuary who may not develop the comprehensive background so desirable in our profession, this is a big concern of our Board and of one of our major committees. We entitled the topic the "Value of the Actuary." We're trying to look at this from the point of view of the employers. Are they getting the types of people they want and expect who have FSA or FCIA after their names? We are as concerned as you are that maybe too many actuaries are getting the inflexible textbook approach--the packaged approach. We provide a set of notes, and if the student can answer the questions, he passes the exam. Are we getting enough of those who with a broad background can sit down, take a set of facts, and find out what the problem is and come up with a solution? I know when I took exams, I did not have study notes. We had references to texts and to articles in the Transactions, articles in the CIA's Recordings and so forth, and we dug out the required material. I don't know that that's the best route, but the question is being raised, and we are looking into it.

Now I would like to make a few personal comments, not as President of the Society. I'm much interested in the education process. I've been following closely the development of this flexible education and the alternative route. I've been involved with it for several years in various capacities. I have one question for Mr. Paradis and Mr. Panjer. The biggest problem that I see in the alternate approach is consistency. How can we maintain the same consistency when we have various universities deciding who becomes an ASA? Will, universities other than Laval and Waterloo, tend to lower their standards in order to get more credit for more ASAs going through their universities? One solution might be that students take the courses and get the credits in the universities but the SOA should administer one uniform final comprehensive examination that all students would have to pass to get their ASA. I'm concerned with this consistency problem, and I hope it doesn't become a U.S./Canadian problem. However, if it is solved, students of both countries should be given credit equally.

MR. PANJER: With respect to consistency, most other professionals have some sort of uniform licensing exam which allows people to practice. That kind of uniform exam, following a required designated accredited university program, would be appropriate to make sure that

you have consistency from university to university. It's done in engineering, medicine, law and so on. These professions give standard exams that allow people to practice. The CIA or the SOA could set up the same system. Furthermore, that would be quite agreeable to the university. One big advantage to the university is that a uniform exam gives, like other professional schools, more scope as to what the university can teach. It's not quite as directed by the specific syllabus. If the syllabus gets out of date and that's noticed by an instructor, he can change the material and bring it up to date immediately. If the instructor knows more about the subject and is interested in teaching more than is on the syllabus material, additional material can be included as well. It would be a uniform exam that could serve the purpose of providing a uniform standard very well.

MR. PARADIS: We also have had this kind of discussion among the professors at Laval. Some are of the opinion that "The Route" besides imposing the content I have described, should go up to the first five exams and ask the corporation to take students from that point on, but some of the professors are of the opinion that corporations should take the students from an earlier point, say at the end of three exams. I think this is the position that is favored now. We may say that the content of the first three exams could be easily covered by almost any university. That's why we say that "The Route" could be a program where the first three exams would be automatically granted to the people who have gone through certain accredited programs. The uniformity of standards would then be obtained if we start from Part 4 and up.

In regard to students being taught on the insurance subjects too late in the program, we saw that difficulty also, as we found out that the students were not exposed to insurance language before they hit the subject on Part 4. The program committee then decided to introduce qualitative courses at the first stage on risk and life insurance in the first semester of their program, in the second semester risk and general insurance, and in the third semester, the group approach to insurance. This is only qualitative as there are no mathematics or formulas included. These are descriptive courses, and we found that this solved that problem since the students start their program learning immediately about insurance. On the subject approach to testing the knowledge as is being discussed now, I think that this would be an improvement over the present system. I am very enthusiastic to hear about the flexible education approach and also the subject by subject testing approach.

MS. NOMI GOODMAN: We are comparing standards for acceptance of university courses with law and medicine. Those standard exams actually allow someone to practice. An associateship really doesn't get you all that far. It's not a final qualification. There are still a whole set of fellowship exams beyond that that will give you a whole different background, so you can't really use this comparison. In addition, you're comparing engineering and law, for example. One's an undergraduate program, and one's a graduate program. Do we really want people that have specialized only in math and insurance, or do we want someone who has got a little education beyond that? If we're trying to

get people to think beyond the rote, our examination system certainly isn't doing that at the moment. If you start forcing people into specific university programs of math and actuarial science, you're not going to give them the opportunity to look at problems from other points of view that they might get elsewhere.

MR. DEMNER: That's a very good point. We are looking at other educational methods, and we are realizing that sending students the material and students taking the exam without courses and so on doesn't provide the best education. Over the next few months and years, we shall be making presentations and getting your comments on some of the alternatives.

MR. MCKAY: This is certainly not the first time that the issue of consistency in the alternate route has been raised, but I think it has to be addressed before there is a solution to the educational system. Right now we pass 30 or 35 percent of the people who write Parts 1 and 2. It's a stringent screening process and I wonder how universities will cope with only having 30 or 35 percent success in the early exams.

There will be pressure to have 70 or 75 percent passing in order to continue getting grants. If you're just dealing with a couple of universities that specialize in actuarial education, we can accept more than 30 percent passing. But if you extend it to all universities in Canada or all the universities in North American, the overall pass rate should probably be what it is today. I don't think that would be acceptable to the universities.

MR. PANJER: Macquarie University in Sydney, Australia, has an accreditation system as do two universities in Great Britain, and their students receive exemptions for Parts 1 to 6 if they receive a B grade. Their guidelines for giving B grades are that 25 percent of the students in the course get a B or above. So they, in fact, operate at roughly that level. In their kind of exemption system, students are exempted from one particular exam at a time on the basis of their success in the university courses. I think that their standards are as high as their respective Institute's standard. That's been demonstrated by the fact that a large number of students, who have failed to get a B score but are allowed to proceed in their university program, have then written the examination of the Institute and passed it.

MR. MCKAY: Would Waterloo and Laval accept that kind of approach where only 25 or 30 percent of the people in the course succeeded? Is that viable in North America?

MR. PANJER: It depends on whose definition of success you use, the SOA's or the University's. We do have university graduates in programs and Macquarie does have university graduates in its programs who do not receive exemptions. Some people receive six exemptions, some people receive zero and they are all graduates of the program. It depend on who you consider successes.

MR. MCKAY: I have one other question on the Macquarie issue. I read the paper that was presented at the International Congress in Australia and one of the issues seemed to be that when students came out of the Macquarie program and into the regular Institute exam system, they had a lot of problems passing exams. I'm wondering if we would have the same problem here.

MR. PANJER: I think the Macquarie experience has created polarity with their graduates. Those very good students pass the exams quickly, and those students who are not as good don't do nearly as well.

MR. PARADIS: I'm not sure that we at Laval believe strongly in the alternate route in the form of waiver exams. We would continue to encourage our students to write the exams unless we have the one route where accredited programs contain the subjects required by the SOA and the CIA.

MR. CLOUTIER: I would like to raise two points as a member of the council of the CIA. First, there's the one of the Canadian content in the exams of the CAS. We recently sent Stan Khury, who is the president of the CAS, a summary on the difference in practices between the U.S. and Canada because it seems that the CAS is interested in including in its syllabus some Canadian material. As regards the CIA, we are going to go about it the same way as we did for the SOA exams; progressively, by including topics that would have to be written by all Canadian applicants as well as American to eventually come to a separate exam as in the SOA. Second, perhaps to answer Mr. Bassett, the CIA has set up a special committee to study the alternate route, and we made sure that in this committee under Mr. David R. Brown we would have representation from the SOA, Linden Cole, as well as a representation from the CAS. But we want to look at this problem in cooperation with the SOA and the CAS.

MR. ANDRE PREMONT: Concerning the rate of success of Laval students at the May 1984 session of the SOA examinations, out of 63 Laval students who wrote Part 1, 53 passed for an 87 percent rate of success. These rates for Parts 2, 3, 4 (whole), 4 (C only), 4 (B and C), 5 (whole) and 5 (B only) were respectively 69, 58, 80, 80, 100, 71, and 50 percent. I would like to add that the majority of our students succeeding in our courses succeed also at the SOA exams, and some, having failed a course at Laval, were nevertheless able to pass the examination of the SOA covering the same topics. These results prove, as Mr. Paradis said before, that independently from the educational route chosen in the future by the professional organizations, at Laval University we shall continue to maintain very high standards of evaluation for our students. My second comment reflects my personal viewpoint about the actual testing system. I believe that testing on all of the topics listed in Parts 1, 2, and 3 should be left to universities. They are in a better position than the members of the professional organizations. By the same token, I don't think that universities are the best places to acquire adequate professional training. As a summary, universities should test the students at least on topics of Parts 1, 2, and 3, and the societies should keep control of the "Fellowship" examinations.