

# RECORD OF SOCIETY OF ACTUARIES 1995 VOL. 21 NO. 1

## REDESIGNING THE BASIC EDUCATION SYSTEM

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*As the actuarial profession heads into the future, it faces new challenges and opportunities—within traditional areas of employment and in new and emerging areas as well. Anticipating such developments, the SOA's Board of Governors named a task force to determine how, within the context of basic education, the SOA should respond to the challenges of the changing professional environment. The recommendations of the Board Task Force on Education focus on the underlying principles that should govern the SOA's basic education program. The recommendations of the Task Force were approved by the SOA Board in January 1995, and communication and design efforts are now underway.*

MR. GODFREY PERROTT: The Society Board became concerned a couple of years ago that the way we educated actuaries was not sufficiently focused on what actuaries might do in the future. One of the drivers for this was the concern that has surfaced in the last two or three years about the employability of actuaries. In the spring of 1994, Cecil Bykerk, who is the Education Vice President, recruited a small task force to think about actuarial education and, in particular, what actuarial education should look like approximately in the year 2000. The year 2000 has become a whipping boy for many things, but it is a convenient, round number. That Task Force consisted of, in addition to Cecil, Bob Shapiro, who has been heavily involved in the Actuary of the Future work, Roy Goldman, who at the time was just retired as the education and examination (E&E) general chairperson, Rob Brown, who is a professor at the University of Waterloo, myself, who was involved in the E&E system up until about seven years ago, and Marta Holmberg, who is the Education Executive of the SOA.

By now we've had about six or seven face-to-face meetings and at least that many conference calls. We made a preliminary presentation to the Board in September 1994, and we presented a preliminary report in January 1995. At that point the Board approved us starting to communicate our recommendations and our ideas and to get feedback from the membership. This session is actually the first, the start of that process in a formal way. I believe we're doing it at all of the spring meetings, and there are various other methods or events planned to solicit input.

I will go through the presentation we made to the Board in January 1995, because I think that's the easiest way to communicate what we were charged with, what we found, and what we recommended. I then want to focus on an open discussion and get the audience's input.

I'd like to go fairly quickly through the presentation we made to the Board. In way of framework we asked, what is the E&E system? We said that it's a process, and that in any business environment, processes are not an end to themselves, but they have to be judged by their results, and the E&E process produces FSAs. These are the results it produces, and so we should focus our attention in any review of the E&E system on the FSAs it produces, or is designed to produce, rather than on the process. Dan McCarthy made some excellent comments at lunch about us being perfectionists, and I think one of the hallmarks of perfectionists is that we have a natural inclination to perfect the process. It's very easy for us to focus on the process and improve it rather than focus on the product that the process delivers and ask, is this the right product?

So as we focus on the output, we need to ask ourselves the question, what output? What do FSAs need? There have been many discussions of this; the Task Force submitted that the key attributes that we need are analytic and problem-solving skills, communication skills, organizational skills, and retrieval skills, which is probably a new concept. As we thought about where the world is going and the amount of information that's available, it starts to become meaningless to test our knowledge of information. We would do a heck of a lot better (if we can accomplish it) to teach people how to retrieve information.

Just out of interest, how many people routinely use the Internet for anything? How many people actually retrieve information from the Internet? I guess I'm the only one. I don't do it very often, but my wife was writing something, and she wanted to know what the federal budget was. It took me about ten minutes to find the federal budget on the Internet in great layout, including the projected budget for the next four years. There are just vast amounts of data there. It's badly organized. It's a terrible place to search. There are better organized sources, but what's happening with the environment is that there are far more data available than we can hope to understand, but maybe we can understand how to explore the data when we need to.

And then the last thing we think that we need actuaries to have is business skills, really from the street-smarts kind of business skills. Some of the ideas that I think Dan was getting into, asking the questions at the beginning, such as, what do you really expect me to do? What kind of problems are you going to come into? Asking the questions at the end, who do I communicate this to? And how? We talk a lot about actuaries and reserving and actuaries who are pressured by operational people to set high or low reserves, depending on what is desired, and we tend to glorify the actuary who sets the reserve perfectly and vilify the actuary who gives into management pressure. But I would submit that a reserve, like anything else, is a balancing act. An actuary who sets the reserve perfectly without any concept of what that does to major customers, to the company, or to whomever is affected by it, is doing the profession no more service than the actuary who says, "Yes, Mr. CEO, if you want the reserve down \$5 million, it's down \$5 million." We have to know the environment and understand the environment that we're operating in.

Staying with the E&E system, what does the process do? The process does three things: it attracts potential actuaries to the profession, it screens potential actuaries, and it educates new actuaries. Most of our discussion in the past has focused on educating, but as we deliberated it, we thought that the process really focuses much more on the first two. It is the piece of the profession that new entrants or potential entrants see clearest, no matter what videos of Super Actuary or glossy pamphlets we show them. People who are thinking about the profession look at what the profession is going to ask them to demonstrate they know what they will need, to learn, and they use that to judge an actuary. If we say that we're trained to attract people with the skills I outlined before, presenting a syllabus in which the first half (which is always the most visible because you see the foreground before the background) is all mathematical, is maybe not attracting the people we want. I think screening and educating sort of go without saying.

So in terms of this presentation, we asked the Board to focus on three questions, and we suggested some answers for them. The three questions were as follows. (1) Do we need different FSAs than the current E&E system is producing? We believe we do. (2) Do we need to change the candidates attracted to the profession? Again, we believe we do. We

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believe that the profession is still designed to attract mathematicians and makes very little effort to attract people with business skills. We're not saying that we don't need the mathematical skills. I don't believe you can be an actuary without strong mathematical skills, but I also don't believe you can succeed as an actuary unless you have or can develop business skills along with the mathematical skills. (3) Do we need to change the focus of the process? And we thought we did.

If you read the syllabus, you would conclude that the SOA believed that actuaries should only work on insurance problems or pension problems. There has been dancing around the investment area, but even if you read the investment track, you would conclude that maybe insurance problems include asset/liability matching or management. We believe that the whole syllabus needs to be looked at with the concept that we are professionals who deal with financial risk. There are other areas, for example, in manufacturing where we could bring value. It won't be the mainstream employment of actuaries, but we should at least open up the impression of what actuaries do so that some actuaries go to other areas, and some other areas see that actuaries are useful.

The work of the Task Force and its recommendations are in fact a continuation of a process that's gone on—I think at one point Roy Goldman traced it back to the 1950s, I'm not going to trace it that far back. It's an acceleration of the process. But the flexible education system/future exam methods (FES/FEM) initiatives in the mid-1980s focused on increasing the variety of courses, allowing credit for methods of education other than examination, trying to change the structure so that it could accommodate evolution, and being responsive to issues that emerge and accommodating specialty tracks. FES effectively created a framework that would enable a future exam methods (FEM) to be introduced. FEM comprised the nontraditional methods, and the objectives that were stated for FEM were to enhance the value of the FSA to effect better and broader education, consistent with the future needs of the profession, to attract, select, and train people who can best fulfill the role of the actuary of the future. In effect, what the Task Force is saying is, we agree with those goals. We're not sure that they've been met, and we think more is needed. FES and FEM in tandem have been taking us in the right direction. However, we need to go further and faster in that direction.

The Actuary of the Future Task Force report recommended that the Society adopt a mission statement and an intellectual core, expand actuarial roles, and develop wide support. Its report recommended informing and educating nontraditional employers about the value of actuarial expertise, motivating actuaries to consider nontraditional roles, motivating those employers to use actuaries in the identified roles, and assisting Society members in preparing for the new roles. And that same Actuary of the Future Task Force, made many recommendations that really form a background and a direction for much of what we are now recommending.

And then last, we look at what this meant for universities and professional education. We thought the proposals gave students and professors greater flexibility in selecting course material, used experts to do the teaching, made it easier to adopt new material and to use unstructured problems, and there was a greater chance of retaining creative students. The benefits to students (our education member was a Canadian), was that there was more choice of courses, students could study in the language of choice, teaching was done in person by experts, there was availability of nontechnical or nontraditional courses and less duplication of effort between school and professional examinations.

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The thrust of what we were saying is that actuaries are professionals who assess and manage strategic and financial implications of risk, and this is not met by today's reality. It goes well beyond life risks. Actuaries should not be constrained to life, health and pension contingencies, and it goes beyond insurance and pension businesses. We should actively look for models outside our traditional roles so that as we educate actuaries, they become at least stimulated by those models. The roles in the future will be different. There will be actuaries in nontraditional business. Conceptual issues will be increasingly important. Those of us who are as old as I am can remember the vast amount of work that actuaries and even consulting actuaries did tabulating hand-calculating reserves and adding columns of numbers. I remember people in my firm who basically did one-half to three-quarters of their work in the first two months of the year and could afford to play a lot of golf in the summer because of it. That task has virtually disappeared. There still is pressure at statement time, but the pressure does not involve adding up columns of numbers. Now the pressure is where it should be, looking at the results and saying, what's wrong with this picture?

Finally, financial modeling will be increasingly important to all businesses, and as we work with other professions, at least this is my experience, they're very comfortable looking to the actuaries as the financial modelers. We understand models. We understand how to build them. We understand how to validate them. And we, at least some of us, understand how to communicate them, and we need to expand those abilities more widely.

We told the Board that we must take these steps that we had outlined in its advance material by the end of 1995 if we are to prosper as a profession as opposed to merely survive. What we recommended to the Board as a proposal and the Board adopted was as follows:

1. (The E&E Management Committee used to be called the Education Policy Committee. It is the board-level committee that oversees the entire E&E function. The committee members perform any function important enough to get to a board level that doesn't need to go to the full board.) The E&E Management Committee is directed to revise its goals to include the following: (a) Focus a syllabus to encompass the following principles. (b) Examine only those subjects that cover essential elements of an actuary's education. (c) Provide a business context with a rigor consistent with that of the mathematical education. (d) Include all kinds of contingencies, not just life contingencies. Include models from outside pension and insurance fields.
2. Restructure the actuarial education into four categories: preliminary, basic, advanced, and professional development.
3. Obtain each category of education from the best available source. The real thrust that we're making here is that the preliminary education that actuaries need, which is implicit in what we do, should be recommended by the Society, but it should not be tested by the Society. In other words, we believe that the system should be restructured so that the mathematical undergraduate-level material at the beginning of the syllabus becomes a recommendation. If you have not covered this material, it'll be very difficult to be an actuary, but we'll assume you've done this. There are other places a syllabus does this. I remember when I took what was Part 6 there was a statement that if you hadn't had, (I've forgotten how many) hours of basic accounting, you should go read this textbook, because

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otherwise you wouldn't understand. Now why they recommended an accounting textbook to understand the annual statement is something I've never understood.

We still believe that the Society should administer and test the basic and advanced material. The professional development material, other than constraints on the content, should be similar to the continuing education requirements of the Academy, although at least in our thinking it would be considerably more, and it would not have a time limit. It would be more a prerequisite, along with the Fellowship Admissions Course (FAC) to becoming an FSA, so that after you'd completed the tested syllabus, you would obtain from a fairly wide list of vendors—which obviously would include Society seminars, but it wouldn't be limited to them—some quantity of professional education before you could call yourself an FSA and hold yourself out to the public as a qualified actuary.

The second act of the Board resolution is that the E&E Management Committee is directed to design a system that incorporates the recommendations of the Board Task Force on Education and bring the design back to the Board for approval, with interim progress reports at each Board meeting until then. The third part of the Board recommendation is that the Board Task Force on Education would focus on two tasks in 1995: to act as consultants to the E&E Management Committee as it develops a system and to develop a communication plan to present to the Executive Committee in March 1995 for approval that targets SOA constituents and their customers, seeking support of the proposal and input into its development. We accomplished the second of those directives and as I said earlier, this is the first outcome of that directive. The purpose of this session is to expose what we have done to you as representing various categories of membership and to solicit your input as to what you agree with, what you disagree with, and how you think the Society should do it differently.

The schedule of The Board Task Force on Education was to develop the communication plan by March 1995 and to present the first draft of syllabus, ASA definition, education providers, financial implications, and transition plan to the Board in October 1995. In our deliberations since that Board meeting, we focused on another set of principles that we think are very important, which I describe as three equitable principles.

1. Ensure that the transition will create minimum dislocations for current students. As presented, this is a major change in the SOA syllabus, and the people who could be most damaged by it, if it is not managed properly, are the students who are partway through the syllabus. We don't have the answers to that, but we all recognize that dealing with that question is very important.
2. A second equitable principle, without which we believe the current membership would try to assassinate the members of the Task Force, is that we should ensure that the value of the FSA is at least on a par with the value of the current FSA. All of us who are FSAs are very proud of what we've achieved, and it certainly isn't the intent of the Task Force to cheapen that.
3. We believe it is critically important to maintain a long-term perspective. It is very difficult to change the education system. We've proved that over and over again in the past. If we attempt to change it on an incremental basis, we believe that it will look like the classic pursuit curve where the dog is chasing the hare but only looks at the hare at intervals to see where it's gone. However, the hare is not proceeding along a straight line.

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It's proceeding in many directions, and we'll never get to where we want to be. We have to have the courage, as a profession, to see where we think we want to be approximately in the year 2000, and then we must work to get there.

That is what we presented to the Board, and we also presented a report that formed a background of our presentation, similar to, although not the same, as the handout we prepared for this meeting. What I want to do now and essentially for the balance of this session is to focus on the questions that are on the last page of that report and get your input.

I guess I'll read through the questions, and then I would strongly encourage anyone to comment on any of them. The questions are, do you support the general direction we've taken? We will try to talk about it in a structured environment, to discuss the four principles and the four categories that the Board adopted, and then talk about any specific questions or concerns you have as the E&E Management Committee moves forward with the design process and raise any comments that you want the Task Force to hear. With that, does anyone want to comment on the general direction?

MS. LINDA M. LANKOWSKI: This sounds like a great idea to me because it took me 11 years to get through the examination process. Taking Part 3 five times and taking survival models four times was really more than I wanted to go through. But if we're getting rid of the preliminary examinations, are we also going to restructure those basic examinations as well? For instance, when I took life contingencies, it was more a test of my calculus skills rather than my knowledge of life contingencies, except for the written part of it. I'm concerned that the part that the Society is still going to do will still be business as usual. Can you memorize this list of problems? Can you integrate a mortality decrement so that you can then go through and put it into a commutation function so that you can solve this problem? I think it's a great idea that we should have creative people, and I count myself as one of those who still has a personality after examinations, but it's a joke around my company that you attain Fellowship and then the creativity goes away. You lose your personality; the examinations work it out of you. I think it's great that we have an opportunity to change this, but I'm concerned that it's just an idea, and it won't be actually followed through the way we would like to see it. Has the Task Force thought about that kind of a problem that could be created?

MR. PERROTT: I would say that the Task Force has not and probably will not get to that level of detail. We believe that that design phase needs to be more integrated into the E&E process. We do, though, think it's critical that it be looked at from a clean-slate perspective as opposed to being looked at by tweaking the existing exams. Actually, that the E&E Committee in the last few years has started to become receptive to the memorization question, and has tried to develop questions that you cannot memorize the answers to.

MS. LANKOWSKI: I think that depends upon where your focus has been and which track you've taken.

MR. PERROTT: I should make it clear that I have not been a member of the E&E committee for about six or seven years.

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MS. LANKOWSKI: I have another concern. This is a radical change to our education process. Is this something that will be put forward for a vote to the membership?

MR. PERROTT: Sam, do you want to take that? I can try, but you can speak to it better.

MR. SAM GUTTERMAN: I'd say it's far too early to tell, and what we're in the middle of, or actually just at the very start of, is to try to get input, to say, are these ideas good ideas to start with? We don't even have a more specific strawman example of what this will mean in reality. Before we get to that stage, I think it's too early to tell if we have something to be able to get to the membership. So we are looking toward the fall to try to have enough input to make that determination. So it may or may not, depending upon what we hear and what we learn from the members. So one of the purposes of this communications strategy is to get that input to see how widely your comments or your feelings are shared. The only thing I'm certain of is that this will not come through eventually exactly the way we have it outlined right now. In terms of where the deviations will occur, it's far too early to tell. I don't know whether we'll have something substantive or concrete enough to come to a vote on. But, again, we all appreciate your input to see if, in fact, there are such issues that come up.

MR. BRADFORD S. GILE: I have you beat. It took me 17 years, and in a way, that has something to do with the comment I have as to what it is we're trying to do with the change in actuarial education. As you pointed out, a good part of the process has always been, probably always will be, a weeding-out process. I think sometimes in both our Society and in the Casualty Actuarial Society (CAS), there's too much emphasis on that. In particular, I think that a certain group of people out there will want the education process at the SOA, and they may already be actuaries in another system. I'm an FSA, but I work exclusively in property/casualty insurance, and that has been a fascinating transition for me. But at the same time, when I look at going through an examination process that is aimed primarily at weeding people out, that's a real problem. I think that's something that should be kept in mind in designing a new system. I think what's going to happen is you're going to have two, different groups of people who you're educating. On the one hand, some people will know absolutely nothing about the profession, they are fresh out of school and will want to become actuaries. On the other side of it, some people who are already actuaries and who have proven themselves to be such, will want to move over into the life area or the health area or whatever area that the SOA is providing for.

DR. ALLAN BRENDER: I heard of this a couple months ago from Rob Brown. Even if the details are sketchy, this is the kind of material that, as former academics, we've been asking for a long time. In general, I really like the thrust. I definitely agree with the idea that the mathematics that's taught in the universities doesn't have to be examined by the Society. But one thing that I would say, though, is that you're going to have to be much more explicit about prerequisites. Because it's not going to be fair to say you have to know everything when it comes to some of the examinations that university students can take relatively early when they haven't had all the advanced statistics. So, you'll have to be able to give them some indication of which examinations they can take first. For some examinations of the basic piece, the prerequisites might be a little bit different from some of the others. That's just a minor point.

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The piece that I really am interested in is the last part, the continuing professional development or the professional development part. I'm not speaking for the CIA, but I can see the kinds of things from experience that are going to come up. I think it's neat in the sense that the CIA, for example, looks upon the FSA, plus whatever else, as a kind of licensing thing, a designation, which it is for us. We want people to have detailed knowledge of Canadian laws and things like that. There's no reason why it has to be offered within the SOA. The CIA can do that, too. It's going to be the same people, so that's just fine. The one thing, though, is that I would imagine that there will have to be a component in there that is examinable. It's not just going to be seminars, because when it comes to that, because there is a licensing kind of component to it, there will be some demand somewhere that people should be examined on at least a part of it. I saw that professional seminar companies offer professional seminars as a possible source. Then I thought about how much they charge, and I thought about 20 seminars at about \$500-600 a pop. No one's going to be able to afford that. We're going to really have to be able to provide much of that education, but I think it's a neat idea.

I'm just curious. I mean there's a statement in there that says there will probably have to be some component of professional development. It almost sounds like we'll have to do that at first, and maybe later on we won't. Or is the idea that you'll always have this requirement, so many hours of professional development kinds of courses or seminars will have to be included? Incidentally, if you do that, you're going to have to get into the whole business of accrediting outside suppliers in one way or another, that this seminar carries so many units of credit. That's going to be another totally different exercise, but you're into that.

I have one very political question. There had been mention about all contingencies. I'm interested in the political question, what about the CAS from two points of view, first, casualty property and casualty contingencies. That's the political issue you may not want to get into.

Second, thinking from the point of view of something like the CIA or the Academy, it would be nice if both organizations had a similar kind of structure. So when it comes to national certification we're dealing with people, even though they come from two places with a similar kind of process. So if both require some professional development, we can have some that's in common and some that's specific for life and P&C and so on. Has your committee or anybody talked to the CAS about any of this? Also, did you look at the British system, their justification for their new system, while developing all of this?

MR. PERROTT: I'll see if I can remember everything you asked. You didn't break for me to comment. The CAS is aware of what we're doing; liaison members are on the E&E Management Committee, and the E&E Management Committee has reviewed various drafts of our report. At the same time, the SOA syllabus is gradually acquiring CAS topics, mostly as electives, but I think some are required. So there's a long-term interesting political issue that Sam and his successors will have to wrestle with.

We have not attempted to touch the continuing education issue. We thought that was beyond the scope of the Task Force. We see, for example, EA-2 as falling into the category of professional education. The SOA would not examine it. However, the only way you could get that component is to pass the EA-2 exam given by the Joint Board [for the Enrollment of Actuaries], and I imagine if the CIA wanted to do similar things, I



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don't see why that wouldn't work. The Task Force is not unanimous. You heard the membership of the Task Force. When I attended the first meeting, I thought Cecil had shot himself in both feet. I thought there wasn't a chance that we could get together on any recommendations, and I'm not sure there's unanimity on the professional education component. My view is that it's a permanent component that, from the SOA's point of view, would not be examinable. There might be a content requirement, but that would essentially be self-certification, again subject to some basic accreditation. But there's a well-established continuing education unit system (CEU) with most of the professional seminars in the U.S. So I think the accreditation would be at a vendor level, not at a specific seminar level, which would be manageable. I tried to comment on everything you've said. I appreciate your comments.

MS. NANCY A. BEHRENS: As you know, Godfrey, I fully support the general direction of the Board Task Force. I'm now the examination chair, so I will try to address Linda's comments. The examination committees have been trying very hard, in the last couple of years, to change the nature of the questions that we ask, partially by going with case studies. I don't know if you took any examinations that had case study questions on them, but they tend to be much longer questions. People read a case study before they go into the examination and then answer questions related to that. We've also tried to get away from the memorization-type questions. That's not always true, and it depends to some extent, on the material. Some of the material is just very conducive to asking list, and memorization-type questions, but as the material changes, then the questions automatically change. Particularly at the Associateship and core-level examinations that's still very true, but at the higher-level examinations we think we are asking questions that do require a little bit more thinking. We are purposely asking fewer questions so that we allow more thinking time. In fact, if any complaint has been heard from the students, it's that we move too fast on changing the questions, because they study from old examinations. One of the reasons the process moves a little bit slowly is to get everyone up to speed, but I think that addressed at least some of the concerns you had, Linda.

MR. DONALD P. MINASSIAN: I have a foot in two camps. I am a college/university instructor. In fact, the last class I taught yesterday was actuarial theory. I also work part-time at Indianapolis Life, and so I have, as I say, a foot in both doors. I obtained my FSA quite late, so the pain is still fresh in my mind. I have to say that I still feel somewhat chagrined about some of the memorizing I had to do: the U.S. Social Security law and that which I have almost totally forgotten. But getting to the point, and since Allan opened the dikes and went through everything here, I'll mention a few disconnected items. First, I hope you do continue to get rid of the memorization part as much as possible. I would recommend, on the ASA examinations, for example, Course 150, maybe theory of interest, too, giving a list of formulas. Why do they have to memorize all those formulas in that book? It's a huge list. Give them a list of formulas. Hand it out at the examination. That was not mentioned, but I recommend that.

Now, I want to ask a couple of questions here. I understand that there might be a general preliminary examination, a so-called attractor examination, that would, in some way, substitute for all the eliminated examinations, which I understand are to be below Course 140. I understand that all those present examinations below Course 140 are, at least in the mind of the committee, the types of examinations to be eliminated. But you said nothing about a general attractor examination that would serve as a weeding-out examination. It's

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called an attractor examination, at least by Rob Brown. I don't know if that's the proper name. Would you comment on that? I understand this is an examination to stress general business applications and be a substitute for the eliminated general math examinations. It would come presumably at the end of the undergraduate college career of a student.

The other question is a general practical question. I would say the general goals seem to be good. It's the implementation that I'm concerned about, just as everyone else here is, at least the people who have spoken. We have a volunteer system now for grading these examinations, even maybe preparing them, and we're going to ask conceptual-type questions for which there is not just one correct answer. There could be several correct answers, and we have hundreds of volunteers who come together for a relatively short period of time, who have their full-time jobs in industry and want to get this thing over with. At least I would think that would be the case. How are they going to be able to properly grade these conceptual type questions if there could be more than one answer? Because we have so many volunteers, essentially it is a volunteer system for preparing and administering these examinations, wouldn't that be a practical roadblock to any major change in the examination structure?

MR. PERROTT: I guess you could take them in reverse order, because it's easier to remember them that way. I think the E&E committee, and we could get Nancy back again, is getting a little too detailed, is focusing on exactly the issues of how to grade more conceptual examinations, examinations that require application of knowledge or even synthesis of knowledge as opposed to examinations that require regurgitation. Speaking about the attractor concept, I'd say what the committee has agreed on is not nearly as specific as maybe what Rob Brown has told you, but I told you that the committee did not have unanimous views, is that there's no question that the first examination or the first two examinations serve as attractors to the profession.

What do potential actuaries do? They look at the first examination that they'll have to take, and in today's environment they say, "Aha, I have to know calculus, I have to know linear algebra, etc." So the first examination that the Society would administer and grade should be focused much more on a business environment. In an ideal world (and this may or may not be possible), it would be as attractive to mathematically oriented business school undergraduates as it would to business-oriented mathematical undergraduates. Now that's a very easy statement to make, and then I just pass the ball to Nancy and say "implement it," but in the thinking that the Task Force has done, I'd say that's where our thinking is going. It isn't a replacement for the preliminary examinations, but it's more, what is the first thing that the potential future actuary sees that will change where we attract new entrants from? In effect, it is changing our advertising. I think I answered the points you raised. Does anyone else have a general comment?

MR. HOWARD W. HEIDORN, JR.: I have a couple of general comments. First, when I started in this profession, not too many people knew about it. I think there were maybe 10,000 actuaries in the U.S., and all actuaries, as far as I knew, were employed. Then we did such a good job of advertising our profession, and we got written up in *Jobs Almanac*. Nowadays we have so many actuaries that a number of them aren't employed, and it seems to me that this process is moving in that same direction. In one respect, the emphasis appears to be to attract, I would think, more actuaries. Maybe you're looking for better actuaries. If it's more actuaries, I think it's a self-defeating purpose. And related to this is the different fields that you've emphasized, and I think that's to try to

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overcome the fact that we now have actuaries who are unemployed. So, that part is good from my own personal point of view.

My last comment, though, is that, unlike the other people who have been up here, I am what one would call a career ASA, except that I've been studying for 22 years and still haven't passed my last examination, but I'm working on it. So I know the frustrations more so than I would guess almost anyone here. One of the biggest problems I've heard of, but not personally experienced, is that most FSAs appear to be snobbish. I've been an ASA for 15–18 years, something like that. I don't have a voting right in the SOA, and now you're trying to take a program like this and present it to a group of FSAs, and they're supposed to embrace it with open arms? If a long-term ASA can't have voting rights, I don't see how the FSA membership in general will buy this.

MR. PERROTT: I wouldn't want to touch on the ASA voting-rights question with a 10-foot pole, but I'd like to respond to your earlier comment. The Task Force is not trying to attract more actuaries. The basic belief we have is that, at least to some extent, the actuaries who are not currently employed or who are looking for work are better correlated to the attraction of people with only mathematical backroom skills. If we move the focus of the profession more toward mathematicians with business skills, we will have a more employable profession, and we will solve the problem you addressed. I define business skills as communication skills. I don't know if you heard Dan McCarthy at lunch, but I would say the input sections and the output sections are the pure business skills. Those are the ones we have to attract and enhance. I don't remember if you made another point.

MR. HEIDORN: Just about the different fields of trying to educate people, new actuaries,

MR. PERROTT: Yes, that's definitely a focus we believe in.

MR. GILE: As I said, it took 17 years, and I was an Associate for 15 years, but I got through the examination process before FES and FEM came into existence. But one of the things that did just strike me in the development of a system like that is how much importance is going to be put on time to get an FSA designation?

MR. PERROTT: That's an interesting question. The Task Force thought that there was concern in the profession about travel time and how it may have increased under FES, but we have received divergent views from the Board members. So, we have dropped travel time as a fairly unimportant piece of what's going on. It appears to be more a distractor than a key issue, and we think that the structure we're proposing would tend to reduce travel time. But because people have many different views on whether it's good or bad, we did not raise it as a major issue.

MR. GILE: I just thought of one other question, and that is, are we, in effect, trying to educate for a more mathematical MBA? The reason for my comment is due to the session on ethics—the breakout sessions where we met in small groups. It had the actuary reporting to the MBA who, in turn, was reporting to someone higher. Now it's getting more to where you might as well just go to graduate school, get your MBA, get it over with in a year-and-a-half, and be done.

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MR. PERROTT: I guess I would say that there certainly is some commonality, but I don't think that we think we're proposing a mathematical MBA; maybe we are. I don't know.

MR. HEIDORN: My greatest fear is that after 30 years when I finally get my FSA it'll be useless.

MR. PERROTT: I don't think that will be a problem. Does anyone want to comment on the four principles that the Board adopted? Alan, you said you had a comment on all six. So I'm checking you off as we go through.

DR. BRENDER: What were you thinking of, for example, with numbers 3 and 4? I can think of some things, but you must have had some things in mind. It would be helpful to illustrate.

MR. PERROTT: I have some quick examples we had on three and four together. Obviously, the manufacturing area has an actuarial problem with the whole issue of product warranties. It is clearly a contingent problem, and there's no reason that some of the questions and some of the examples we give should not be couched, for example, in product warranties. It's interesting that when mortgage insurance—not decreasing life but the mortgage guaranty insurance, the MGIC kind of product—was developed, no actuaries were involved in it at all. That's obviously an actuarial problem. Some people will default on their mortgages, and you're guaranteeing if they default, but the people who developed mortgage insurance didn't even, as far as we know, consider asking an actuary to help them develop it. So, those are a few quick examples. We've not spent a lot of time trying to think of examples, but we firmly believe that they're there. Both the contingencies should be thought of, and also the models and the questions that revolve around them will cause people to think about them.

FROM THE FLOOR: There's another concern that does relate to some of this. I could bring it up under any point. I mentioned the volunteers, and you'll say this is too detailed now, but I think we have to start thinking about it. If we're going to go to this, we're going to have to have a whole bunch of new study materials and study note writers. As one who has been through this process recently, and the memory is still fresh, I really think the process of writing study notes must be improved. What do I mean? Many people write study notes. They're selfless volunteers and the Society owes much thanks to them, but the conditions under which they write, at least in which I conceive they write, really should be changed. For example, they still have their full-time jobs. They're writing this on the side. There are deadlines to meet. I would favor them coming maybe to Society headquarters, getting some kind of sabbatical leave from their companies or from the Society or whatever, and interacting with each other so that the study notes get examined carefully by other objective people and get revised, even several times, if necessary. Many of the present study notes are quite obscure in places and are sometimes contradictory and sometimes duplicate other study notes. One author doesn't seem to know what another author is writing even for the same course, and I find this to be a problem. If you get to this, you're going to have to change it. Allan, yours was one of the better notes.

The study note problem is one that I think is going to have to be addressed. Again, I have nothing but praise for the authors. They have used their own time. They're writing

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for free. Maybe that's another problem. Maybe they should be paid for this. But we do have to improve those things, especially if they're going to change. We have to have another process, because all these volunteers are sort of independently isolated from each other, working and producing these things. So that's a comment that relates to this.

MR. PERROTT: We certainly have viewed this as a massive undertaking for the E&E committee. We're not unaware of that. Your comments will be heard by the committee. I know they struggle to make the study notes better.

MR. GILE: I just have a basic question about Board Principle A1. It says examine only those subjects that cover essential elements of an actuary's education. Have you attempted to actually list what the essential elements of an actuary's education are, or is that something that's going to be developed?

MR. PERROTT: If you look at the placeholder in the handout for the meeting, that implies what we think are essential or not essential elements. That's probably the best list.

DR. BRENDER: I used to teach at the University of Waterloo. Within the faculty of mathematics we were actuaries. I would answer your question by saying that it's what the actuaries taught as opposed to the rest of the mathematicians, and it works out to what they have in mind. But think of it that way, if you were to build a school, think of the things that the actuarial department would teach, not the mathematicians.

In terms of study notes, when the U.K. redid its system, first of all, it introduced a general principle, which was that there was no text or official documents. A syllabus said this is what you need to know; these are the topics you must cover. Now one of the things that happened then was that there developed two commercial organizations that started producing material, and this was anticipated. One of them, as a matter of fact, is something called the tutorial service, which is run by the Institute of Actuaries and the Faculty together and one was a commercial organization. The latest news is that they're merging. But the point is that, in fact, there are people who do this for a living, and maybe that's reasonable. I don't know. I'm curious. Did you consider this whole idea of just a syllabus—no study notes, no official study material—just a syllabus?

MR. PERROTT: We didn't consider it because it's more detailed than we think our task should be. Like I said, we think that the actual design of the system should be primarily a task of the E&E committee, directed by the E&E Management Committee, and we have tried to avoid designing the syllabus.

DR. BRENDER: I appreciate the answer, but in this case it's a fundamental principle. I know that on the other side of the ocean they took it as a fundamental principle. Their equivalent of the E&E committee could design the examination structure, could design the syllabus, but a much higher-level decision said they weren't going to specify one society-given set of text to be the official text. Therefore, examinations wouldn't be looking at a certain page of a certain piece of material, because officially there was no material. I mean it's higher level. I'm not so sure the E&E committee is the place to make it. It's a real policy decision on a much higher level.

MR. PERROTT: No, that's a good point, but we did not consider it.

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MR. PAUL M. KAHN: I don't see any reference to actuarial courses. Dr. Brender mentioned the curriculum at Waterloo, which is probably the major actuarial school in North America at the moment. One of the results of the proliferation in actuarial students caused by the *Jobs Almanac* and others has been the proliferation of colleges starting something called actuarial programs. There should be some consideration given to this. Some programs are better than others, I would think, in developing the program.

Let me make one comment about creativity, and I will say that for many years I've always thought that we've needed three kinds of actuaries. We've needed a good journeyman actuary, a good technician. We've needed a creative actuary, a scientist. And we've needed executives with a scientific background. We don't need many scientists and executives. The examinations have not produced the latter two in great number. An FSA by the name of Victor Modugno wrote a very revealing and interesting book about the Executive Life situation in Los Angeles. One comment in the book that struck me particularly was a conversation he had with the valuation actuary as they walked around the company after lunch to take in the air in Beverly Hills. "Ah"—the valuation actuary commented—"I am an artist and the financial statements are my canvas."

MR. PERROTT: Does anyone else have any comment on these principles? Does anyone have any comments on the four categories we've been talking about?

MS. LINDA M. KAHN: I have a question about Board Action Principle 4B. Now, is that intended to suggest that this is the order? I mean one would infer that this is the order in which these categories will be introduced. My concern, of course, is 4, professional development. If it takes more than 10-15 years or whatever to get through the whole process, you're likely to be out there practicing as a professional actuary, and you should have had some exposure to the professional development category as part of your education before finishing the other three.

MR. PERROTT: That has been a topic of debate among the Task Force. I don't think there is agreement. Some of us think that professional education is different after you have completed the examinable part of the education and liken it to, for example, the British Institute, which requires you to obtain experience after you've completed all the examinations, in order to get your FIA. Others of us feel that it can occur concurrently. So it's a topic that has been discussed, and I don't think the Task Force has any consensus at the moment.

FAC still comes at the end. That, I think, is a universal agreement on the Task Force.

MR. HENRY B. RAMSEY, III: Given that I understand this to be a solicitation of opinions, I'm going to offer one that may not directly result. Preliminary is listed in the handout as being something that we're going to rely on other groups to examine. I want to say that I strongly endorse that. We shouldn't be bothering to test calculus. We're wasting our examination time, efforts and expertise and, to be honest, as a practicing actuary, my expertise in calculus is very limited. I'm working in more sums than integrals, but the point of using our skills and expertise where they're best applied, I think, strongly applies in that preliminary. We shouldn't be testing that. We shouldn't be trying to educate in that area.

MR. PERROTT: I'm glad you agree with us because, obviously, we feel that as well.

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The last two questions on our list are much more open-ended, so let's take them together. Are there any specific concerns that you believe should be addressed in the design process? If so, what are those concerns? And what other comments or questions do you have on the direction proposed by the Task Force?

MR. DAVID M. HOLLAND: My remarks are more in the form of comments, and first I'd like to say that I think the Task Force should be commended for taking a very hard look at the real foundation of the profession that we have. This is a strategic analysis of what we're about, and whenever we take this kind of look, we find out that re-engineering a profession is not always easy. My concern, or the comment that I'd like to share, is that we really need to be sure that the membership is in line with the action that we're taking. The examinations, as I said, are considered the foundation of the profession. The members think that the examination system, more than anything, is the right of passage into the profession, and if we're going to succeed with this project, we must have full support for the membership. The number of people who have attended this session does not really indicate the importance of this topic. I'm sure as you go through the rest of your communication program that there will be many opportunities and very much input, but I just want to be sure that the membership is brought on board and in line with what you're doing. So, again, my commendations.

MR. PERROTT: It is also very important to us. At least one of us was a senior member of the E&E committee during the college credit fiasco, and we have no desire to repeat that. This is kind of a go-forth-and-tell-your-friends speech and this is not by any means a done deal. The Board has said we need to rework it, but we better be sure we get everyone's input. The two-page outline of a possible system is deliberately called a placeholder because we thought *strawman*, or even worse, *strawperson*, was too definitive a term. We're not there yet, but we wanted something out in front of people so they could at least get some quantified idea of what we're looking at, but it is very fluid at the moment. We believe in the principles we've enunciated. We certainly have not designed a system and so now is the time for anyone to comment and affect the process, and we want those comments.

MR. STEPHEN G. KELLISON: Picking up on David's last comment, I certainly support that. I think that membership, if this were to be put up for a vote, will be resistant to it until they're really brought on board potentially. So, I really would encourage the Task Force, as they go through this process and there is discussion to really be very clear about what the problem is that we're trying to solve here. Be clear about how this will actually address the problems that the Task Force sees there. I can't stress that enough to where I think that kind of communication is going to be very necessary to get the membership as a whole on board behind this.

On the preliminary part of this, I think everyone would agree that the preliminary examinations have been redundant for a number of years, many, many years really, in terms of serving a meaningful role to show that you can be an actuary. I think that they really are more a screening device, a weeding-out device, if you like, to get people interested and to allow them to show some progress along the way without having to get into specialized courses. Employers have used them. I think the reasons those examinations have been there really has much more to do with that kind of an issue than they really do with the fact that you can't be a qualified actuary unless you are tested on calculus to be sure that you know what is required. But that need will still be there. I'm

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not suggesting we need to keep doing that by any means, but we kind of refer to this weeding-out process. I think we have to remember that no matter what we do, we're going to be involved in that here because we sort of have an open-door policy. We take anybody who comes in, who sends in a small amount of money. Anybody can write these examinations. Anybody can write them any number of times with no penalty to failure. So, it's not like, say, a professional school, where there's high entrance requirements, and there's a lot of prescreening as to sort of who can get started in this profession. It's really wide open to anybody to take a shot at it any number of times. When you set up a structure like that, you're inevitably going to have to have some sort of weeding-out mechanism, whatever you want to call it. It may not be pleasant to talk about it, but when you have a totally open-door policy, there will have to be some mechanism to do that, and that shouldn't be thought of as a bad thing.

I guess a final comment is on the professional development. I'm really intrigued with that idea. I think there's a lot of potential merit to that. I would say, though, that you need to think about how that integrates with continuing professional education after attaining some status because you have gotten into that to some extent, and I think the profession as a whole, may need to also revisit continuing professional education. I know that it has been a controversial area for the Academy for many years, and I don't know that we've really reached the end of the line as to where we think that should be. So, where do you sort of stop the education, at which time we give you a credential, and how do we then ensure that professionals continue to maintain some degree of currency with continuing education. It is an issue that this may raise before it's all over.

MR. PERROTT: I'd reiterate that continuing education was beyond our charge and, like the ASA getting the vote, it is a minefield that I'd prefer to avoid.

DR. BRENDER: First of all, going back to this whole business about the college credit thing, it occurs to me that was an argument about giving credit for examinations. I find it difficult to imagine that if you went up to the same people and said we're dropping calculus, they would create a revolution and say, no, we must have calculus.

MR. PERROTT: I hope you're right.

DR. BRENDER: Yes, but the trouble with all of this is that I don't think you're going to have too much trouble at the lower end because you're dropping mathematics. But the professional development material, which I happen to think is a great idea, opens the door to all kinds of suppliers. Most of it seems to be nonexaminable and I think that's where most of the problem's going to be.