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The seven pillars of risk management wisdom

by David Ingram

One example of the difference between actuaries and the general population is that when we refinance our mortgages, most of us check the calculation of the payment amount, not by looking it up in a table or by using some canned software, but by calculating it directly, "from first principles" as our college professors would have said.

This, among other things, illustrates the level of rigor and mastery that actuaries as a profession bring to our chosen fields. Actuaries have always approached insurance reserves and prices of insurance products with an unsurpassed attention to detail and quality.

In the field of risk management, such rigor and mastery is difficult to find anywhere. As recently as 1998, a Nobel Prize-winning pioneer of modern finance theory miscalibrated his risk management model on the way to the multibillion-dollar collapse of Long Term Capital Management.

Banks are credited with creating scientific risk management in the late 1980s and early 1990s, but insurance companies and insurance actuaries have been using many of the risk management practices that banks have recently "discovered" since at least the 1970s—placing us in about the same position as the Native Americans whose continent was "discovered" by the Europeans in the 15th century.

At the time of the Spanish invasion of Central and South America, the local civilizations were at a level of technological development that was somewhat behind but similar to that of Europeans. Yet, 100 years later, the former cultures were almost gone and little independent forward development had taken place.

Insurance companies do not need a transplant of bank risk management. They have different risk management problems and will continue to have different problems, even if the accounting profession brings us to a point where our accounting is (in their view) more consistent.

What insurance companies need is a new creation that builds off of the good risk management work that has historically been developed and implemented by actuaries and incorporates the new understanding of risks and markets that have been growing over the past generation in the banks and in academia.

Several pillars will be required to build the needed paradigm for insurance company risk management:

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editorial

Regulation in litigious times

by Godfrey Perrott

Godfrey Perrott
Editor responsible for this issue

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In this editorial I want to address two thoughts and hopefully stimulate your thinking about them.

1. What are the implications of Sarbanes-Oxley on lawyers? How might we feel if similar obligations were placed on actuaries by an external body?

2. What should we, as actuaries, do about the litigious world we live in?

I recently read an analysis of the SEC Part 205 Rule (currently in its exposure period) that was drafted in response to a directive in the Sarbanes-Oxley Act. I thought it would be interesting to try to recraft the SEC rule to one that might be adopted by a hypothetical insurance regulatory body with respect to actuaries. (This is clearly a topic that would apply to the CAS as well as the SOA, and I hope this editorial generates discussion in both bodies.)

In effect, the SEC Part 205 Rule places fairly significant obligations on any attorney who represents an issuer in front of the SEC. An issuer is anyone who issues a security (stock, debt, options, etc.); "represent" has a fairly broad interpretation. The narrowest actuarial analog might be anyone appointed as an illustration or valuation actuary, or whose opinion is relied on by an illustration or valuation actuary.

This is my paraphrase under those conditions of SEC Part 205 Rule:

- Any valuation actuary who is aware of a material misstatement of reserves must report that misstatement to the company's chief actuary and, if the chief actuary does not make an appropriate response within a reasonable period of time, the valuation actuary must report the misstatement to the company's Board of Directors or a Board committee consisting solely of independent directors.
- Any illustration actuary who is aware of a material misrepresentation in an illustration must report that misrepresentation to the company's chief actuary and, if the chief actuary does not make an appropriate response within a reasonable period of time, the illustration actuary must report the misrepresentation to the company's Board of Directors or a Board committee consisting solely of independent directors.
- (A provision suggested, but which didn't make it into the rule that was exposed would require the actuary to make a "noisy" withdrawal from the appointment under certain conditions. A noisy withdrawal would require—under the actuarial analog—notification of the withdrawal with reasons to the Insurance Commissioner.)

A material misstatement or misrepresentation means (for this purpose) a misstatement or misrepresentation that an investor or insurance purchaser would consider material in deciding whether to invest in the company's securities or purchase an insurance policy from the company.

I think most actuaries would view this as a reasonable requirement if the scope were limited to the valuation and illustration actuary, as I have postulated. However, we might be more squeamish if the scope were widened—for example, to any actuary working for the company in an actuarial position and any consulting actuary providing actuarial service to the company.

We also need to consider what material misstatements mean. Is it failing one of the New York Seven scenarios? Is it making unsupportable assumptions about future stock market performance to underlie stochastic testing?

What about Ling?

With all the personality, Ally McBeal may not be quite enough to be actuarial. [See Presidential Musings column in the February 2003 issue.] Alternatively, as a graduate of Stuyvesant High School, Ling Woo [Lucy Liu] would attract the types we want in the profession.

Beda Chan, ASA
Hong Kong
bchan@hku.hk

The Psychology of "Schmidt"

It seems "About Schmidt" has struck a chord (or discord) among us [see March 2003 issue]. Personally, I found the film humorous and insightful in both style and content. It was well-paced and displayed a full range of both comedy and tragedy.

But many actuaries think differently and voice serious shortcomings with the film. Some note that by being set in retirement, the story short-changes the hero's lifelong value and service to his community. Others are disappointed with the film's significant deviations from the book.

Though many laugh at the elements of actuarial caricature, much of the criticism centers on the portrayed actuarial image being a disservice to the range of individual people who happen to work as actuaries. But my hunch is that the story hits the proverbial bull's-eye regarding the pathos in the actuarial image. What is the danger we actuaries face in having a surplus of objectivity and rationality, and how do others react to it?

The film suggests to me that it is a loss of soulful connection, understanding and flow. And what is all this strutting and fretting over our actuarial image if not our sensitivity to the actuarial soul? For a review of the film and a psychological profile of Warren written by an actuary and psychologist, visit *www.mythological-movieclub.org/reviews/schmidt.html.*

John Patrick Smith
Milwaukee, Wis.
john.smith@milliman.com

May "Schmidt" Retire into Obscurity

Nice job on the interviews with real actuaries for the Society of Actuaries March newsletter. Since Nicholson didn't win the Oscar, actuaries probably have less to fear about this particular "type-casting" following them into eternity.

Christopher Connell
Falls Church, Va.
www.cceditorial.com

At the same time, actuaries are becoming increasingly aware of litigation risk. I recently reviewed the Model Standard Valuation Law (SVL). It has the following helpful wording:

> "For the purposes of this section, 'qualified actuary' means a member in good standing of the American Academy of Actuaries who meets the requirements set forth in the rules of the American Academy of Actuaries.
>
> "Except in cases of fraud or willful misconduct, a qualified actuary is not liable for damages to any person, other than the insurer and the superintendent, for any act, error, omission, decision or conduct with respect to the qualified actuary's opinion.
>
> "Disciplinary action by the superintendent against the insurer or the qualified actuary must be defined in rules established by the superintendent."

This section of the SVL has not been adopted by many states. One of the questions we face as a profession is: How do we fulfill our responsibility to the public to provide information that actuaries are uniquely qualified to provide in a professional manner, while preserving our ability to practice as actuaries and not be devastated by unwarranted litigation?

Many consulting actuaries today face the situation where errors and omissions insurance is difficult or impossible to obtain, and the prices for it have skyrocketed. Legislation like that outlined in the model law is beneficial to the public and to the profession, and we should encourage it.

I would like to thank the individuals who have contributed their time and effort to this edition of *The Actuary*. Dave Ingram of Milliman USA delineates the role of insurance actuaries in risk management, Chuck Waldron of Berkshire Life outlines major trends in disability claims and Mike Magsig of Korn/Ferry provides actuarial career advice.

Finally, this is the last issue of *The Actuary* that I will edit. I have been the life insurance associate editor for the past four years and decided it is time for me to retire. I know I have infuriated some of you at times. Hopefully, I have also stimulated your thought. I have thoroughly enjoyed my time as editor.

The Actuary is an important communication vehicle for and between actuaries. Unfortunately, I have observed over my four years of participation a significant reduction in the Editorial Board's level of control and independence. This is dangerous and, I believe, will reduce the value of *The Actuary* to the SOA membership. I urge the Board Advisory Group on Publications and future Editorial Boards to restore the independence of *The Actuary*. This will help ensure the publication's continued success.

The seven pillars of risk management wisdom

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1. An understanding of how financial markets treat risk.
Market prices can be decomposed into margins for expected losses and margins for risk. Sometimes insurance companies are in a position where they can think, in advance, of the market risk margin part of a security price as an excess margin that they can divide up in some fashion with their customers. Other times, that is a disasterously wrong thing to do.

Also, market participants need to understand clearly when they are taking a different position regarding the price for risk than the market is implicitly taking. They need to be clear that their position is a deliberate, reasoned position, and not the result of an oversimplified financial model.

2. The law of one price.
As insurance products have become closer and closer to pure financial instruments and further from being insurance risk transfer transactions, the closer we get to being able to replicate insurance products with market-traded financial instruments. The law of one price then says that our price for the insurance product must be the same as the replicating basket of securities.

Insurance pricing models and valuation systems that do not obey the law of one price will become increasingly suspect. Insurers who priced variable product benefits with models that differed significantly from the market are finding that they cannot afford to go to market now to hedge risks that they no longer want to retain.

3. A model for viewing the insurance risk transfer portion of insurance company products on an equivalent basis with the market-traded elements of insurance products.
This includes clear recognition that some of insurance risks are diversifiable while others clearly are not. Financial theory tells us that you cannot get paid for taking diversifiable risks, but you should get paid for taking nondiversifiable risks.

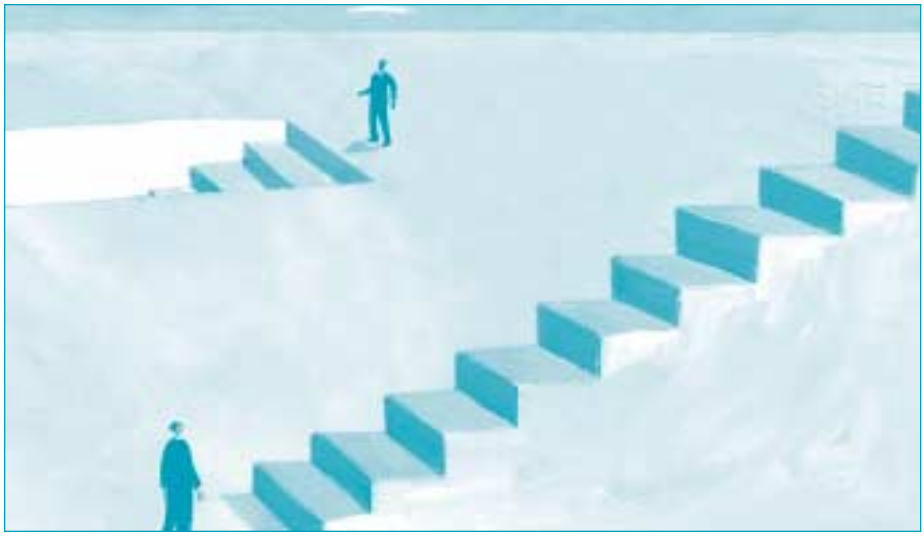
Valuation and pricing models should reflect both the expected losses as well as the level of uncertainty of these insurance elements in a way that is consistent with market treatment of uncertainties of other types of losses.

4. An understanding of the interaction between risk and discount rates. When valuing a bond, it is a circular definition to say that the cash flows should be discounted at the yield rate.
As mentioned previously, the yield rate is a combination of factors—including risk relating to the type of bond, the sector, the economy and the specific company issuing the bond. The only situations where the yield of a bond or a portfolio of bonds and other securities is the exact correct discount rate to evaluate a stream of insurance cash flows is when those cash flows have the same duration, convexity, key rate durations and default risk.

Insurance pricing has migrated from the use of an asset earnings rate to the use of a cost of capital rate for discounting. However, an average cost of capital rate is probably only the right discount rate for products with exactly "average" risk within the company. The treatment of risk in the liabilities to be discounted needs to be the opposite of the treatment of risk in the discount rate. If the cash flows are presented as an absolute certainty, then the discount rate needs to reflect the specific risk of the cash flows occurring at different times or at different levels. If the cash flows fully reflect all the risks of the product, then the discount rate needs to be a risk-free rate. Risk should be reflected once and only once.

5. A mastery of stochastic scenario generators.
Since many insurance risks and insurance products do not lend themselves to complete replication in the financial markets, stochastic simulation models are the most likely tools for evaluating risk. Choosing and calibrating models is a major discipline of its own. Markets, by their very nature, do not lend themselves to completely accurate modeling. In fact, there probably should be an axiom that, if at any time market models seem to becoming very predictive, then the market is heading into a new regime. (Remember when everyone "knew" in the late 1990s that any market drop would be followed by a gain often twice as large as the drop?)

6. A clear metric of risk in insurance companies.
The most significant step that was taken in the development of bank risk management was the leap into a paradigm risk that was



immediately carried to all levels of management. That paradigm, based on value-at-risk (VAR), is far from perfect, and many actuaries spend all too much time focusing on the flaws of VAR.

What is more important is the drastic shift in point of view regarding risk management that has taken place in banks since the implementation of VAR. This risk measure has facilitated the development of the entire risk management culture in banks. A new culture needs a language, and VAR is the language of risk management in banks.

The insurance industry needs to find an equally clear metric for risk. Ultimately, risk management is trending toward a single platform for assessing risk. The risk metric chosen for life companies needs to be applicable across all of the risks, products, investments and ventures of the firm.

7. Management and communication expertise.
For risk management to be effective, a risk management culture needs to be developed within companies. Managers at all levels need to embrace risk management as part of their jobs, not as being just the responsibility of the corporate risk manager. Risk and risk management activities need to be communicated clearly to the directors, all the way to unit supervisors and sales agents.

Advancing risk management

Actuaries are acting as scouts and wagon train leaders in the advancement of risk management. The scouts are finding the connections between the new risk management techniques and the needs of insurance companies. The wagon train leaders are bringing their companies into the new land of risk management.

This effort to advance both the leading edge and the average level of risk management practice for actuaries has been under way for some time now. Risk management materials have been included in the exam syllabus, as a part of the finance and investment exams as well as under the asset/liability management (ALM) topic. Risk management topics have become quite common at Spring and Annual SOA meetings, sponsored by the Investment, Financial Reporting and Product Development Sections. The SOA Board of Governors and Strategic Planning Committee have identified risk management as one of the major new areas of practice for actuaries now and into the future.

Actuaries are acting as scouts and wagon train leaders in the advancement of risk management.

Almost two years ago, the Finance Practice Area Professional Education and Development Committee formed a task force to work on developing risk management seminars and advancing the educational opportunities of actuaries in the risk management area. To date, the Risk Management Task Force has hosted five seminars and two sessions at the 2002 Annual Meeting and has developed 10 subgroups that are developing projects and materials to advance both the leading edge and the average level of practice in areas like correlation of risks, extreme value models, policyholder behavior in the tails, enterprise risk management, economic capital, pricing for risk, equity modeling and health insurance risk management.

Over 100 active volunteers and another 150 interested parties are involved at some level in these subgroups. Financial support from the Finance Practice Area, the Investment Section and the Financial Reporting Section has provided crucial funding for the initial projects of the subgroups.

Two forces are advancing the push for risk management in life insurance companies. The first is the progression of risk management in banking. Several prominent insurance companies have brought in executives from banking who have expectations of timely and effective risk management information and processes.

A chief actuary in such a company tells of her experience when one February the new CEO with a banking background said that he wanted a risk management report by "four ten." The actuary thought that April 10 was a quite ambitious deadline, but the CEO meant 4:10 *that afternoon.*

At the same time, stock and rating analysts who cover both insurance companies and banks are looking for evidence that insurance companies have as much mastery of their risks as banks seem to portray.

The second force driving the current interest in risk management is the losses that insurance companies have experienced over the last three years. Definitely not unprecedented, but certainly unexpected equity market losses have hit companies hard that have high concentrations of variable, segregated-fund or unit-linked business.

These products were originally touted as very low risk when they were new. "All" of the investment risk was being transferred to the policyholder, or so it was thought. Maybe that is largely true in the long term, but companies that are writing off deferred acquisition costs or paying guaranteed minimum death benefit claims and setting up Actuarial Guideline 34 guaranteed minimum income benefit reserves are certainly suffering in the short term.

The credit market losses were both unprecedented and unexpected. Insurance companies and actuaries had seen it as their right to be able to take a large portion of the credit spread into income. While corporate bond defaults averaged under 3 percent per year for the past 30 years, the past four years have seen defaults of a cumulative 31.8 percent, more then twice the level of the last several credit market downturns. The risk premium that had been paid to bondholders for many years to pay for the uncertainty of the timing and severity of credit losses was suddenly being collected back by the market.

Often the reaction of insurance companies, driven at least in part by rating agencies and regulators, is to flee any areas that

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cause problems. However, this time the losses come from areas that are key parts of most company's fundamental business strategy. A company cannot flee equity market risk without eliminating the entire variable product line. Corporate bonds are the largest component of insurance company general accounts. Risk management is needed to provide a framework for companies to convince themselves that they can stay in the variable products business and continue to be able to invest in bonds that provide the levels of spreads that support their businesses.

Risk management includes control and optimization processes and is self-correcting through validation and stress-testing.

But what is this risk management? In a single (but very long) sentence, risk management is: (1) setting and enforcing limits for all firm risks that are appropriate for the capital and risk appetites of the firm, (2) increasing and rewarding activities with superior risk-adjusted return and fixing or limiting activities with inferior risk-adjusted return, and (3) identifying and preparing for special events that could significantly impair the earnings and/or the solvency of the firm.

Risk management includes control and optimization processes and is self-correcting through validation and stress-testing. Leading-edge risk management seeks to do all of this on a completely consistent basis across all the risks of the firm. The comparability of a life retention limit to an investment concentration limit to an ALM mismatch limit would be immediately determinable from the risk management system's information flows.

Compliance with these and other risk limits is monitored on a timely basis, and a process exists for correcting exposures that exceed limits. Firm appetite for risk is determined through the examination of the economic capital of the firm as well as the tolerance for earnings surprises and drives the development of all limits on a systematic basis. Risks are retained, transferred, reinsured, hedged or avoided according to their risk/return profile.

Incentive compensation that encourages achieving superior risk-adjusted return and certainly does not pay bonuses for taking risks without regard to the returns is consistent with risk management. Extreme event scenarios—such as the losses recently experienced, or further decreases in interest rates to levels below minimum guarantees or interest rate increases large enough to spark disintermediation, or claims levels from insurance products that suggest misestimation of level or trend in claims—are examined for their potential impact on the company and potential responses are developed by risk managers.

The CEO of the company with the best risk management will be able to take the very first call from an analyst after the next shadow passes over the industry and say "Yes, we have been studying that possibility for several years now. We expect that the impact of this situation will be in the range of X to Y and feel that our strategy is unchanged by this situation."

Risk management can be seen as a system that provides the sort of guidelines that football coaches use to determine that they will punt on fourth down, except when A, B or C occurs and that baseball managers use when deciding to bunt with a man on first and no outs, except when X, Y or Z happens. These rules do not guarantee that they will win each and every game. But they do provide a generally accepted framework within which they expect to be able to win the most games over the course of the season. And, if followed, the rules provide cover when facing the sports writers after a loss.

Risk management for insurance companies needs to be developed to the point where insurance company executives are in the same position as football coaches and baseball managers who can use their rules as a starting point for determining their strategies and tactics and as a basis for explaining their actions to the sports writers. Actuaries need to attain a level of rigor and mastery of risk management to be able to support that kind of process.

David Ingram, FSA, FRM, PRM, is a consulting actuary with Milliman USA, New York. Ingram is the leader of the SOA Risk Management Task Force. He can be reached at david.ingram@milliman.com.

Second ballot voting kicks off in July

The Society of Actuaries will hold the second ballot election for officers and board members from July 15 to August 15. Board member candidates can be found at *www.soa.org/second_ballot03.html.* Also see the supplement that accompanies this issue for the president-elects' views on important issues.

Since SOA election materials are sent via e-mail, please check your contact information on the online directory to make sure it lists your current e-mail address. Fellows who do not have an e-mail address on the SOA database will receive paper election materials in the mail. All voters will have 30 days to cast their ballots.

If you have any questions about the election, please contact Lois Chinnock, at the SOA office at 847.706.3524 or *lchinnock@soa.org.*

Trends in morbidity

Pricing and reserving individual disability insurance is no walk in the park.

by Charles M. Waldron

A relative handful of actuaries in the United States have earned the title Disability Insurance (DI) Actuary through years of pricing, reserving and monitoring individual DI. For these actuaries, individual DI remains fascinating, albeit stressful. The fun begins with DI's dual dimensions: claim incidence and continuation.

Unlike life insurance, coverage doesn't stop when an insured goes on claim. Enhancing the challenge is the uncertainty introduced by a variety of contractual variations and emerging morbidity trends. DI actuaries struggle to quantify their impact on both claim incidence and terminations and to anticipate their future direction.

A review of the 1985 Commissioner's Individual Disability A (85CIDA) table, the current industry standard table, might suggest that pricing and reserving individual DI are relatively simple exercises. The claim incidence and termination rate vary by age, gender, occupation class and elimination period. However, DI actuaries have realized over the years that not only is this table out of date, but the factors affecting claim costs go far beyond age, gender, occupation class and elimination period.

Outdated data

The 85CIDA table was based on industry disability experience from the late 1970s and early 1980s. The SOA's Individual Disability Experience Committee (IDEC) is presently working to update this table by studying industry experience during the 1990s, which was a financially difficult period of time for this business. The committee is planning to release information later this year regarding morbidity trends over this period relative to the 85CIDA. These results will then be used to construct a new industry individual DI table.

Generally, companies have reported claim incidence rates that are 70-80 percent of 85CIDA incidence (lower incidence rates increase profitability). Claim termination rate trends have not been favorable. Claim termination rates in the first year of disablement are generally 50-70 percent of 85CIDA claim termination rates and then grade to 100 percent of 85CIDA by late in the second year of disablement (note: lower termination rates reduce profitability).

Physician experience

During the 1980s and early 1990s, physicians were the primary targeted occupation of many individual DI carriers. They had high incomes, wanted to buy the best DI coverage available and were motivated to work in spite of medical impairments, if possible. They were given the best products with the lowest rates. A rough estimate is that 20-25 percent of the industry's individual DI premiums were from physicians.

In the early 1990s, physicians found their incomes restricted by malpractice insurance, Medicare reimbursements and medical restructuring. As a result, job dissatisfaction escalated, which was soon followed by an onslaught of disability claims. This trend affected both claim incidence and claim terminations. Many of these doctors could receive lifetime benefits at levels that exceeded their predisability incomes with annual cost-of-living increases. Not surprisingly, there was little financial incentive for these doctors to return to their practices.

Many companies report that their physician experience has leveled out and, for some, improved. However, it has not reached the favorable levels enjoyed by DI carriers during the 1980s. Some companies have assigned physicians to physician-only occupation class (or classes) on new business, which reflects the higher expected claims experience.

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Geographic differences

It has been evident for some time that certain key states seem to experience regularly more unfavorable morbidity than the bulk of other states. California and Florida, which comprise 10-20 percent of the business for many companies, have been problematic for most DI carriers, as well as certain regions like the Southwest. Although the industry standard tables do not recognize geographic differences in morbidity, companies typically charge 10-30 percent higher rates in these states. The IDEC plans to analyze these geographical differences as it studies the morbidity trends during the 1990s.

Mental/nervous claims

The 85CIDA table does not recognize differences in claim continuation patterns by claim diagnosis, although many companies are aware of them. Mental/nervous claims have been reported to have claim termination rates of about 40 percent of normal claim termination rates. The impact of this difference became pronounced beginning in the late 1980s, when the frequency of mental/nervous claims for individual DI carriers more than doubled. Unlike group long-term DI, relatively few individual DI carriers restrict the benefit periods of these very subjective claims. Some companies report that these claims represent 20 percent of their open claims.

This trend creates a potential inadequacy in any company's claim reserves. The low termination rates, along with the higher incidence of mental/nervous claims, mean that these claims will comprise an increasing proportion of the open claims. The expected claim termination rates applied to all claims, regardless of diagnosis, will soon become obsolete and reserve strengthening will be in order.

Older ages

Of the individual DI polices in force today, a significant portion has lifetime benefits. Most companies project the liability for lifetime benefits using the 85CIDA claim termination rates. These rates at ages over 65 were based on group long-term disability experience during the 1970s and appear to represent mortality at these older ages that are very high relative to recent mortality tables.

Since, at these ages, the chances of recovery from disablements are extremely small, companies may be projecting these lifetime benefits with tables that assume unrealistically high mortality rates. A new standard industry table needs to have long-term claim termination (i.e., mortality) rates that are more representative of current mortality rates.

The typical definitions of disability involve some form of own-occupation coverage.

The impact of contract provisions

The experience upon which the 85CIDA table was constructed represents a time when individual DI contracts were much simpler. Although the industry was beginning to experiment with long-term own-occupation definitions of disability and residual benefits, these features were not nearly as prevalent as they are today. The standard tables basically assume these simpler products and do not reflect the impact that the variety of contract provisions available today can have on both incidence and continuance.

The definition of disability

The typical definitions of disability involve some form of own-occupation coverage. A claimant is considered disabled if unable to perform the material and substantial duties of his or her occupation. Contracts may state that claimants cannot be working while disabled or they limit the own-occupation period, say, to two years.

However, the higher occupation classes typically make long-term own-occupation available (with no such limitations). It is logical to expect that these different definitions will have a varied impact on claim termination experience, but it has been almost impossible for companies to quantify the differences.

Residual benefits

Residual benefits, which typically pay a reduced benefit in proportion to lost income, are very common. When they were first introduced, many DI carriers had hoped they would encourage claimants to return to work and, in effect, lower overall claim costs. That has not been the case.

Although they may encourage claimants to return to work, a number of claimants may find that they can receive a combined income of wages and DI benefits that are comparable to 80-90 percent of their predisability income, while working at only 50 percent capacity or less. In effect, we expect that claimants with residual benefits may stay on claim longer than those who have only total disability benefits.

Residual benefits also allow claimants to satisfy the elimination period while partially disabled. This means that the incidence rates for DI contracts with residual benefits should be higher than those with only total disability benefits. The 85CIDA does not distinguish contracts that may or may not have residual benefits.

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Actuaries beware: It's tough at the top

by Mike Magsig

Many actuaries will reach the CEO level in the course of their careers. For insurance actuaries moving up the corporate ladder, it's good news and bad news. The good news is there's plenty of room at the top; the bad news is the risk of failure is high. However, being savvy about several management trends can help reduce that risk and keep your career on track.

Recent studies of *Fortune* 1000 companies show that CEO tenure has shrunk to between four to five years—a reduction of more than 50 percent in the last decade. While the pace of CEO turnover in the insurance industry may not have reached this level, it has accelerated considerably in the last 10 years.

A review of the SOA Directory shows that 766 actuaries hold the titles CEO, COO or President. Of course, not all their companies are in the *Fortune* 1000, but lessons learned from these larger corporations can be useful even to smaller companies.

CEOs today are being held to much stricter standards and higher scrutiny both internally and externally. There are many dimensions of complexity in the executive suite—regulatory changes, economic downturn and fierce competition for limited capital. All of these elements make the CEO position a most complex role within the organization.

Corporate boards have been blindsided by unprecedented interest rate shifts, sharp declines in asset values, failed acquisitions, corporate culture alignments and ethical and corporate governance lapses. Growing public skepticism is the by-product.

In a survey of *Fortune* 1000 directors conducted by Korn/Ferry International, 53 percent of those surveyed have turned down a board position because they felt the risk was too great. Today, more than any other time in history, it is more difficult to recruit qualified CEOs and board candidates.

No insurance company can expect to sail tranquil waters decade to decade. Yet some companies have consistently demonstrated superior performance and leadership tenure that stand the tests of time. Interestingly, when I regularly ask industry leaders, analysts, regulators and consultants which companies they most respect, the same ones are mentioned. For stock companies, those distinctions are reflected in market capitalization and price/earnings multiples.

Boards and CEOs in these companies spend considerably more time on leadership development, management assessment, knowledge transference and team-building skills. They realize that the most significant investment (and operating expense) is in people. Let's examine each of these initiatives briefly and then discuss the implications for actuaries.

1. Leadership development: Much of the executive turnover presently in insurance companies may be the indirect result of the cost reduction efforts of the last 10-15 years that eliminated layers of management and internal/external training programs. Mentoring and company-directed development initiatives were victims.

Today, some successful companies are crafting individualized plans with the assistance of outsourced services to groom executive talent, generally for the next level of responsibility. The array of programs can run the gamut from liberal arts courses and foreign languages to serving on civic boards.

Generally, the end game is for executives to broaden their horizons and adaptability. More and more, many of these "next level" jobs are lateral moves because organizational structures have flattened and demand for well-rounded executives continues to grow.

2. Management assessment: Thanks in large measure to technology and the growing body of management science, human resources (HR) executives have more cutting-edge tools available than ever to assess management potential in a less subjective fashion. Today, thinking, behavioral and cultural fits and gaps between an individual and the organization can be measured.

Even in the current anemic economy, many leading-edge companies are embracing the value of assessment in finding sponsored training to address performance gaps, improve employee retention and increase job satisfaction.

Assessment, used properly, is not intended as a means of trading people out of the organization. Rather, it inventories, realigns and upgrades talent. It is not uncommon for an executive search firm to encounter "false starts"—client companies not effectively deploying management assessment that initiate search projects only to fill positions internally shortly thereafter.

This is an expensive approach risking time, money and the potential loss of executive talent. We see management assessment

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also used effectively in calibrating internal talent to the marketplace in a fashion that makes final outcomes more accepted and successful.

3. Knowledge transference/ team-building: Much has been written about the "hands-on" leader, but the connotation, as applied in high-performing organizations, has changed. In the most respected companies, a hands-on leader is building effective teams that share their knowledge and learn from each other. The leader's job is to make certain the right questions are asked, sufficient data are gathered and timely decisions are made.

Organizations can be impersonal groups despite best efforts at personalization. Few have the resources I've described earlier. What are the implications for actuaries desiring to grow or realize greater career security but who may be working "outside of the loop"?

- View your career as a platform comprised of a series of experimental and knowledge-building blocks necessary for your consideration of new responsibility. Solicit objective 360° feedback and seek confirmation from HR professionals.
- Approach your responsibilities from the company perspective, not from a functional approach. Consider how the board of directors might want you to carry out your job.
- Broaden your thinking by expanding your personal network to include individuals outside the actuarial profession and current/previous employees. Participate in civic groups that will expose you to different points of view.

Although no silver bullet, this course of action will increase the prospects of your career movement being upward and not outward.

Mike Magsig is a managing director in the insurance practice of Korn/Ferry International, New York. He can be reached at mike.magsig@kornferry.com

NAAJ articles tackle new retirement realities

The July 2003 issue of the *North American Actuarial Journal (NAAJ)* features three articles from the SOA's Retirement Implications of Demographic and Family Change Symposium. These articles approach the related issues of aging and retirement from diverse perspectives.

Linda Smith Brothers considers the questions arising from rational and irrational retirement decisions in her article "An Individual's Chosen Retirement Age: When Is the Economically Feasible Retirement Age Chosen over the Anchor Provided by Known Others?" Smith Brothers examines the differences between retirement decisions based on the rational allocation of money, time and effort versus decisions influenced by an anchor, retirement ages chosen by friends, colleagues and family members and the impact on that individual's decision.

In "Issues for Implementing Phased Retirement in Defined Benefit Plans," Patricia L. Scahill and Jonathan Barry Forman expand on the legal and actuarial aspects of phasing into retirement versus full retirement and the effect on defined benefit plans. Yung-Ping Chen and John C. Scott also examine the role of gradual retirement, uncover the barriers raised by implementing gradual retirement programs and offer examples of programs available to individuals in their article "Gradual Retirement: An Additional Option in Work and Retirement."

Visit the *NAAJ* Web page at *www.soa.org/bookstore/naaj03_07.html* to preview the abstracts of these and additional articles appearing in the July 2003 issue. If you are interested in any of these articles, we invite you to submit a discussion for publication in a future issue. Please contact Kimberly J. Wargin, editorial assistant, at *kwargin@soa.org* for a copy of the entire article.

SOA headquarters moving in June

The SOA headquarters has moved—but not far. We are still be located in the building at 475 N. Martingale Rd. in Schaumburg, Ill., but in early June we moved from the 8th floor to the 6th floor and part of the 5th floor. Our new space is far more efficient and will allow us to serve our members more effectively. In addition, the new offices will comply with building codes and federal regulations regarding space and accessibility. The SOA's address and phone number remain the same, but our new suite number is 600. As always, we welcome all members to stop by and visit our new headquarters.

Employers comment on recent Board E&E decisions

This is the third in a series of articles addressing potential changes to the education and examination (E&E) system. Look for follow-up articles in future issues of The Actuary.

In March, the SOA Board of Governors endorsed five statements intended to shape the E&E redesign (see the box on this page giving a brief overview of the Board's directives, as well as the full text in the May 2003 issue).

This article presents a discussion among employer members of the working groups who agreed to share their views on the recent Board decisions from the viewpoint of their specific practice areas.

Moderated by Judy Powills, SOA's director of assessment and candidate affairs, the panel included Max Rudolph from the finance/investment practice area, Bill Falk from the health practice area, Brian Louth from the life practice area and Mike Archer and Bruce Cadenhead, both from the retirement benefits practice area.

Powills: You've been selected to participate in this discussion because of your knowledge of the education and qualification redesign and your involvement with the working groups and advisory groups. It's critical that we gather input at this very important planning stage from key stakeholders. So today, although each of you

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Board directives to E&E working groups

1. All Fellowship tracks should be of approximately the same scope with regard to the number of exams/experiences and the expected travel time through those exams/experiences. That scope should be equivalent to three or four (to be recommended by the working groups) traditional Fellowship exams.
2. With the exception of a possible track in enterprise risk management, no additional Fellowship tracks should be investigated or proposed at this time.
3. The ASA Course should provide an introduction to financial security systems, utilizing the control cycle context where applicable. Development of learning objectives is more critical at this time than are delivery and evaluation mechanisms. Creation and implementation of the ASA Course should not delay the implementation date of the new education system.
4. Preliminary education as conceived in the September 2002 report is acceptable as is. The working groups should continue to refine learning objectives and define "validation by experience."
5. Implementation of the new structure should be preceded by the assurance that high-quality study materials are in place.

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brings a personal perspective, we'd like to hear your reactions from the employer point of view in response to the direction that the Board has given to the working groups.

Overall, what are the benefits of the direction the Board has approved?

Archer: Looking at this as an employer, we're pleased with the direction. The end result should be that actuaries, when they've completed their education, will have a blend of both general actuarial knowledge and practical knowledge. I believe this is important in order for our new actuaries to be productive members of our firm quickly—able to work in the retirement area with a good grounding in the things that we have to do every day.

Falk: Specifically from the health area, we see, first, the ability of new candidates to be exposed to the health concepts a bit earlier in the process, especially through the ASA Course. And we see a general decrease in the total travel time that we can expect from candidates in the future.

Louth: Travel time is a big issue for people, and it's important to have an education system that can address that better. Hopefully, these changes will push toward that for us. I am encouraged. I know from talking to other people working with the actuarial students that this will be a positive result. From the overall perspective of the life practice area, the quality and relevance of the education material itself is quite important. The direction we are headed will make things better and more relevant for the students. This will be of benefit to all actuaries and their employers.

Rudolph: Our company views the decision to move the ASA designation earlier in the process as a positive one. As others have stated, overall travel time is always an issue. We want to make sure that people know enough to be successful, but not get bogged down in the system so long that they spend their entire career taking exams. The other real positive in the current E&E proposal is that it reflects the growth in risk management, finance and investment topics across all practice areas.

Cadenhead: I would emphasize the travel time, particularly the travel time to an ASA; making that shorter is a very positive step. Also, this offers the potential for a much better connection between what we actually do at work and what's being studied on the exam. Talking to some of the students, there was some concern in the past, that they didn't see how what they were studying would ever apply. I think that will change and be improved.

Powills: What do you see as the challenges overall with respect to this direction and what are your ideas for overcoming those challenges?

Cadenhead: "Commitment from employers needs to be there to support the whole volunteer system."

Archer: One challenge that I've seen with the working groups is avoiding the temptation to try and put every last thing that a practicing actuary needs to know into the exams. The Board has addressed that by affirming that the exams cannot possibly cover everything and that there's a need for continuous learning after the exams are completed.

The groups are going to have to be very diligent about determining the essential knowledge that all pension FSAs should have, and then leave other items to further study post-exams.

Rudolph: This is yet another change to the SOA education system. We have people going through multiple systems just to get their FSA. That's always a challenge from an administrative standpoint for both a company and students.

The other challenge that we see, as an employer, is that there might not be a filter exam. Without that early calculus or statistics exam, it is much more difficult to filter students for an internship program. And students will find it hard to determine if the profession is a good fit for them until they are nearly done with their college program. It doesn't allow students time to make an alternative choice if they find they aren't qualified to move forward in this profession. We need to be fair to both students and employers.

Falk: The challenges I see are similar. One of the things that we're wrestling with right now as we define the ASA Course is the tremendous breadth of information we want people exposed to at that level. We need to make sure, as Mike indicated, that we're really concentrating on the things every ASA should be exposed to. And that's not easy. There's just so much material that different people would like to see candidates exposed to or tested on, that we can't possibly cover it all. So, we will have to make some tough choices.

Cadenhead: We're planning to do a couple of very new things here. One is the ASA Course and the other is some kind of nonexam form of validation of topics by experience. We need to be very careful that we are able to implement those successfully. I would encourage paying particular attention to the delivery mechanisms to make sure that they work as intended.

Louth: There are a couple of things I can think of from an employer perspective. One is attracting and retaining all of these

students who are properly selected through the exam system to become really good actuaries. Employers make a big investment to support and develop new actuaries. Hopefully, the process will work. I worry sometimes as an employer about being able to provide all of the volunteer people into the education system to deliver this. Commitment from employers needs to be there to support the whole volunteer system. I think there could be a significant gap between what we would like to achieve and what we can physically support in terms of resources.

The education system is much bigger than the exams. A lot of study material will need to be created. I don't know if people in today's work environment have the time to contribute all of the study material that we need. Having been involved in the E&E system for quite a while, I am very aware of how much effort it takes to get new and relevant education material for the exams. To talk about changing and moving things forward by having all of the study material ready on top of everything else is an admirable objective. I am not sure we have the commitment there from the whole profession, including employers, to support the creation of all the materials. I think the big challenge is all of us getting behind this initiative and supporting the whole process to completion.

Powills: That's a good segue into discussing some of the detail because, certainly, developing quality study materials is incorporated in one of the statements in the direction that the Board has approved. Let's start with the first one, with regard to the fellowship tracks and how they should be relatively equivalent and the fact that the Board has decided that three or four traditional exams would be the right number for each of the tracks. The working groups, specifically, will determine whether it's three or four but, nonetheless, there has been an upper limit set by the Board. What are the advantages of this and, on the flip side, the disadvantages?

Falk: I think the primary advantage of trying to keep the tracks equivalent is that candidates won't be advantaged, or disadvantaged, in terms of either travel time or effort by which practice area they decide to specialize in. The working groups were very concerned about that. We didn't want to have anyone choose a particular track because it was perceived as "the easy track."

On the other hand, it is a challenge to fit the health area into a few courses because of the broad scope of information that we think a health actuary needs to be exposed to. Health is one of the broadest practice areas, including techniques drawn from casualty practice, techniques used by the life actuaries and techniques used by pension actuaries for retiree welfare evaluations.

So we have a big challenge ahead of us in condensing the material down to the really important stuff to be covered in the three or four exams. We're pushing for four, rather than three, because of that. It is unlikely that we will divide some exams into subspecialty portions as a result.

Falk: "We didn't want to have anyone choose a particular track because it was perceived as 'the easy track.'"

Louth: Three or four exams sounds very comforting to everyone. It sounds somewhat like the old system that we've all written under in some way. It is important to be sure that each fellowship track has adequate content to support having that track. Even though you say three or four exams, new tracks may not have adequate material. It is important to make sure that the definition of what you need to make it to an FSA provides you with the right skills, knowledge and wherewithal to progress down each of these different tracks.

Rudolph: I think the preceding comments are exactly right: You need the consistency between the different tracks so you don't encourage students to seek out the "easy track." If there is more material than can be covered on the FSA exams, we should include it as part of a continuing education program. Perhaps the profession will need to require CE to maintain a designation down the road. Each ASA will have a solid base of practical knowledge from the topics covered in the ASA Course.

Louth: It's a great point. Coming out of the exam process, every actuary should have a common base of knowledge. The specific tracks will help individuals develop a greater depth of knowledge in particular areas. No matter which track they have followed. Whether that common base of knowledge is separate or part of the fellowship tracks, it needs to be there.

Cadenhead: First, I don't think we should be too rigid on this. I think it's good as a general idea to make the tracks roughly equal, but I think people are going to choose the track that aligns with the career they've chosen, rather than the track that gets them to the FSA fastest. I don't see any great value in becoming an FSA in one area when you're practicing in a different area.

My perspective may be somewhat colored by being from the pension area. We've always had a bit of a difference because of the enrollment exams—at least in the United States. While these exams have been incorporated into the requirements, they have always been given partial credit, relative to the exam hours and the study time it takes to get through them, because they are *fairly* detailed and specific. So I would say we should allow for some flexibility for differences, but not huge

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differences in the amount of material in the different tracks.

Archer: I couldn't agree more. If there was a wide differential in number of exams and difficulty of exams from track to track, you could get people choosing a track because one is easier than the other. As long as they're roughly comparable, I don't think you'll see that. And, from the pension employer's perspective in the United States, an end goal is to have complete synchronization between the enrolled actuary exams and the FSA exams. So, when you're an FSA, you've completed the EA examination material.

Powills: Certainly the importance and immediacy of enterprise risk management (ERM) has been recognized. However, the direction set by the Board for the working groups is that, currently, with that exception, no additional tracks should be investigated or proposed at this time. And there is a plan in place to address the ERM issue. Overall, what are the benefits and drawbacks of this statement?

Louth: ERM has become a very hot topic and a greater focus in many life insurance companies. It is really a greater awareness of managing and dealing with risk, something that actuaries should be, and have been, doing for many years. I'm not sure that is adequately broad enough to create a separate track for it. It may fit better within one of the other tracks or it could be a better description of a track that currently exists. I get very concerned about creating new tracks, from a narrowness of what those tracks are. At this point I think that it is prudent to hold off on a significant expansion of the number of fellowship tracks.

Rudolph: I have been involved in some of the discussions to recognize ERM through an exam track or practice area. Brian's comment is right on. The finance track today covers much of the material that you would put into a risk management track. One option is to change the name of that track.

In the long run, it is appropriate to have three separate exam tracks within the finance practice area: one for investments, one for risk management and one for finance. There would be quite a bit of overlap in material between the three.

This issue originally dealt with a possible generalist track. There was discussion last summer to create a generalist track, primarily for academics and foreign nationals. It developed into the risk management issue and the generalist track died a slow death.

Falk: This will not have a major impact on health employers. Some health actuaries have issues similar to those in the life area. They can choose to go into what's currently the finance or investment track to get that sort of background, if they wish. For those of us in health benefits consulting, the main advantage is that it won't take volunteer and staff resources away from what we need to do in order to work on new practice areas. We have enough on our plate already.

Archer: I believe that part of the reason for the slow death of the generalist track was a concern about levels of volunteers and how beneficial a generalist track would be. The belief was that there would not be all that many students who would be interested in pursuing a generalist track and, therefore, to use up volunteer resources on that would be less beneficial than using the resources in some of the other areas.

Powills: Moving on to the ASA Course. The focus here is to spend time thinking through all the learning objectives and not worry, at least from the working group perspective, about how we're going to do all of this. Some of that will be researched and undertaken by staff at the SOA. From the employer perspective, why is this important?

Falk: As a member of the group that is designing the learning objectives for the ASA Course, I think the primary advantage to this structure is that it ensures that all new ASAs are exposed to the entire breadth of actuarial practice—in all the practice areas at a practical level—through the actuarial control cycle, through exercises that they'll be asked to do, and through discussion of real problems that actuaries see in their day-to-day work.

At the meeting we had last week to discuss the learning objectives, I commented that the new structure moves the ASA definition from what it was when I became an ASA to something that's more useful. When I became an ASA, and I assume when a lot of us did, an ASA was someone who had passed through all of the math background required to be an actuary, but had very little, if any, practical exposure. What we're saying now, with the ASA Course, is that a new ASA will not only have the necessary mathematical background but also will have been exposed to practical issues in all of our traditional practice areas.

Louth: As an employer, it is important to get good quality actuarial people who can perform in their roles. The concept of the ASA Course appears to take the students in the direction of being able to be more effective by taking things like the control cycle concept and learning with practical examples. A little bit of a concern is how long it will take for that ASA Course to be completed by the individuals. It is nice to see that we do not want to slow down implementation of the new education system because of this, but I am concerned to know, as an employer, how long it is going to take a person to get to the ASA

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"God's Actuary" wins first place in the Actuarial Speculative Fiction Contest

by Gary Lange

For several months this past winter, many of your actuarial associates spent their spare time putting creative ideas in story form to share with us some "wondering thoughts" on the future of actuaries or actuarial science. They sent these stories to me, thus, entering the Fifth Actuarial Speculative Fiction Contest proudly sponsored again by the SOA's Computer Science Section.

The contest rules are simple, as they should be when putting speculative thoughts on paper: (1) stories must include some sort of actuarial topic, (2) authors must have passed at least one actuarial exam and (3) stories are not supposed to be too lengthy.

All of the actuaries who entered the contest and speculated on the future of some part of actuarial science were winners. The money winners were:

- First place ($200): Alan Shulman for "God's Actuary."
- Second place ($100): Gregory A. Dreher for "Actuarial Certainty."
- Best use of computers ($50): Steve Mathys for "Antiquity in Their Midst."
- Best use of actuarial science ($50): Joe Kincaid for his contribution, "Worth the Risk."

All of the stories have been combined in an anthology, *2003: The Outer Limits of Actuarial Thoughts*, which can be found on the SOA Web site at *www.soa.org/sections/spec_fiction.html.*

Special thanks go to Bob Mielke, associate professor of English at Truman State University, who judged this year's contest; to Lois Chinnock and Debbie Jay from the SOA office; and especially to the Computer Science Section for its full support of this contest. Congratulations to all who participated. See you next time around.

Trends in morbidity

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Lifetime and cost-of-living benefits

Both of these benefits remove significant financial incentives for claimants to return to work. If claimants know that their benefits will cease at age 65 (or sooner) or stay flat while inflation reduces their purchasing power, they may be less inclined to settle into a long-term claim and give up their predisability source of income. Many DI carriers have been able to observe lower termination rates on claims with this benefit, although the 85CIDA does not anticipate any differences.

Conclusion

The impact of morbidity trends and the variety of contractual provisions and benefits on DI carriers have, for a long time, been estimated using rough rules-of-thumb. Companies with large enough databases may be able to quantify many of these factors but, at present, industry tables and studies are of little help. The results of the IDEC's work should be a significant benefit to the market. Unfortunately, even when its work is completed, many questions will remain unanswered.

Charles M. Waldron, FSA, MAAA, works for Berkshire Life Insurance Co. in Pittsfield, Mass. He can be reached at berkcxw@berkshirelife.com.

Session topics set for ERM symposium

Chief risk officers will share their perspective on key risk issues facing organizations when the first Enterprise Risk Management (ERM) Symposium convenes July 29-30 in Washington, D.C.

ERM is the identification, measurement, prioritization and management of risks (broadly defined) that face an organization. Actuaries' training and specialization make them uniquely qualified to play a role in this strategically critical area.

Jointly sponsored by the SOA and the Casualty Actuarial Society (CAS), the symposium will take a comprehensive look at all aspects of ERM techniques for the insurance industry. It features more than 25 sessions, with topics focusing on modeling, risk metrics and capital management, among others.

General Session 1

Chief Risk Officers Roundtable

With the global movement toward ERM, a growing number of companies have created the senior-level position of chief risk officer (CRO). The CRO represents an exciting, high-profile career possibility for actuaries—within insurance companies as well as the broader financial services industry. The CRO job description is evolving and varies quite extensively across companies and industries.

Panelists will describe why the position was created in their companies, what the role is, how it has changed over time and how they see the responsibilities changing in the future. They also will share the challenges faced in implementing ERM, "secrets of success" and advice for those considering a career as a CRO.

General Session 2

Ask the Experts

This session concludes the seminar and offers an opportunity to tie up loose ends and help round out attendees' learning. The question-and-answer format will allow the audience to explore aspects of ERM further. A panel of experts will be available to help address trends and practices, offer perspectives and answer technical and nontechnical questions. Representatives from both the SOA and CAS will be present.

Concurrent Sessions

CS-1 ERM in Banking

Bank risk management has seen tremendous development over the past 10 years. Speakers will talk about the efforts and progress that banks are making to develop full ERM systems and some of the reasons that ERM has not developed faster. They will share what they see as the most effective parts of their ERM programs and discuss the areas where the cost/benefit relationship may not support full development.

CS-2 Value of ERM

Have you been asked to justify the worthiness of an ERM program? Attendees will get the opportunity to hear how ERM is making a difference in various organizations. Find out the reasons others have started an ERM program, how they implemented them and the benefits achieved so far.

CS-3 How ERM is Consistent with Embedded Value Reporting

Recent events have posed serious challenges for insurers and heightened their appreciation for risk. Furthermore, because of the spotlight on corporate governance, insurers are emphasizing transparency and disclosure. Best practice companies are improving financial transparency by developing systems that give them a better understanding of their business (embedded value) and linking this to an overall framework for ERM. This session is intended to provide an overview of how embedded value addresses external and internal questions on performance measurement and how embedded value is consistent with ERM.

CS-4 Outside Perspective of ERM from Regulators, Rating Agencies and Analysts

Regulators, rating agencies and Wall Street analysts evaluate enterprise risk for a variety of purposes. In addition to the published financial reports, these organizations are increasingly coming to depend on the comprehensiveness and quality of the company's ERM process. In some cases, increased reliance is being placed on the company's internal models of economic capital and discussions with management regarding company performance and risk management.

Speakers at this session will present their assessment of enterprise risks for the insurance industry and the extent to which establishing a clear internal ERM structure aids their evaluation of a company. In addition, panelists will provide their opinions on the apparent recent growth in the number of CRO positions and the importance of this role in the ERM process.

CS-5 ERM Case Studies

Several insurance companies have developed ERM programs. Speakers will discuss their experiences of where ERM has proven to be an effective risk management tool, quantified certain risk exposures or created added stakeholder value to the organization.

CS-6 Sarbanes-Oxley

The Sarbanes-Oxley Act specifies broad reforms in corporate governance and disclosure rules for public companies that have a significant impact on the way companies do business. This session will cover the basic provisions of the act as they affect financial services organizations and discuss the implications for corporations and practicing risk managers.

CS-7 Credit Risk Modeling and Management

What are the latest developments in the measurement and analysis of credit risk? During the last several years, credit risk has been receiving increasing attention as a growing source of risk within an enterprise. This panel will address various methods of credit risk modeling: use of migration matrices and various other models of default probabilities and costs. A comparison of the different models of default risk, their advantages and disadvantages will be presented and discussed. The presentations also will offer examples of effective techniques for measuring tail risk and address ways to extend credit risk modeling beyond a one-year horizon, as appropriate for long-term risks, as well as the related challenges.

CS-8 Market and Credit Risk Integration

Integration of various risk modeling and management techniques has been receiving increasing attention at an enterprise level within many companies. Market and credit risks appear to be excellent candidates for such integration. This panel will provide an overview to the possible approaches to integrate the modeling of market and credit risks. The session will address stochastic modeling of interest rates and quality spreads, modeling correlations in credit and market risks and managing counterparty risk in portfolios. The discussion will also include extension of integrated modeling beyond the one-year horizon, as appropriate for long-term risks, and related challenges.

CS-9 Reinsurance Counterparty Risk

Risk management often involves the transfer of risks to another financial institution through reinsurance or derivative transactions. Those who entered into energy derivative contracts with Enron found out that they had substituted "counterparty" risk for the energy price risk that they had sought to transfer away. Companies have various procedures to monitor and react to changes in levels of counterparty risk. At this session, attendees will hear about the procedures and experiences of several companies.

CS-10 DFA and DFCA as ALM, ERM Tools

Dynamic financial analysis (DFA) and dynamic financial condition analysis (DFCA) are conceptual tools developed by the CAS and SOA, respectively, to address the issue of company risk management from a holistic, comprehensive perspective. The panel discussion will present an overview of each method and offer insights about how these existing tools might best fit into an ERM framework. The session will address current issues associated with implementation of DFA/DFCA in a company setting and offer the CAS and SOA perspective on the potential for further improvement of these methods to make them more efficient and applicable as ERM tools.

CS-11 Managing and Measuring Operational Risks

Operational risk encompasses a wide range of possible problems, ranging from fraud to computer failures to lawsuits to the impact of terrorists and natural disasters. Great strides have been made in the management and measurement of these risks, and much work for improvement is in progress. Speakers will discuss practices currently in place at insurance companies as well as potential programs that are under development.

CS-12 IAA Progress on RBC

The NAIC instituted risk-based capital (RBC) about 15 years ago. This was a substantial enhancement in solvency regulation because, for the first time, capital requirements reflected varying levels of risk by insurers. The International Actuarial Association (IAA), in response to a request from the International Association of Insurance Supervisors, is developing a global framework for RBC. Members of the IAA's Working Party on Risk-Based Capital will discuss progress made thus far and anticipated future developments.

CS-13 Risk-Adjusted Capital Allocation

Each component of a company's operations involves a different degree of risk. As an enterprise holds capital to protect itself against the risk of adverse financial developments, capital—or more precisely the cost of capital—needs to be allocated to profit centers, business units or product lines when making critical business decisions involving risk-transfer programs, profitability targets, growth strategies, etc. Such capital allocation is based on sound economic principals only when the allocation accounts for the risk profile of each component of a company's operations.

This panel will discuss how to reflect risk and capital costs in making critical business decisions and will provide an overview of the challenges associated with risk-adjusted capital allocation within an enterprise.

CS-14 Risk and Capital Management Through ALM

The topics of economic capital, value-at-risk and capital-at-risk are starting to receive increasingly greater attention by the financial community and broader economy. At the same time, the techniques to deal with these concepts are still being developed and refined. How can a company utilize its current expertise on the asset/liability management (ALM) front to explore the impact of broader types of risk on its economic capital position? This session will introduce ALM

concepts that will allow for integration of various risk types into one model and potential risk reduction at the enterprise level.

CS-15 Risk Premium for Insurance Product Pricing

Historically, actuaries have been charged with developing techniques and methods to price their products adequately. Embedded in the overall price is a charge for the expected losses as well as compensation to the insurer for taking on the risk—the risk premium. While many approaches have been developed over time that derive the risk premium as a function of the volatility of the underwriting results of the product, few of them reflect or incorporate other sources of risk borne by the enterprise.

Speakers for this session will discuss how methods for calculating risk premiums have evolved over time (both for life and property/casualty insurers) and how they see future research improving the way risk premiums are developed.

CS-16 Securitization & Other Instruments for Transferring Risk to the Capital Markets

In recent years, the utilization of capital market capacities as a risk-transfer mechanism has been growing in popularity in various sectors of the economy, including the insurance industry. A number of techniques for transferring various balance sheet risks to the capital markets have been developed and established. This session will provide an overview of several methods of nontraditional risk transfer, concentrating on the concept of securitization.

The panel will give examples of typical capital market securitization frameworks, comment on the economic objectives for their utilization and discuss possible benefits and challenges of this and other nontraditional risk-transfer techniques.

CS-17 Modeling Extreme Market Movements by Market Microstructure Theory

Modeling and predicting extreme financial market movements is a central problem for risk management. In a world where 10-sigma events occur every few years, the traditional statistical approach to risk management (e.g., value-at-risk) is rather inadequate. The traditional approach ignores the economics of why people trade and how they trade in financial markets. This session provides a rational approach to extreme market risk that incorporates the role of traders, market makers and investors.

The audience will be exposed to the fundamentals of market microstructure theory and techniques to model information asymmetries, behavioral biases and uncertainty in price inference. As an application, the market risk model is calibrated to explain the essential features of the October 1987 stock market crash. The same basic model explains the financial crisis of the Long-Term Capital Management hedge fund in 1998.

CS-18 Risk Metrics

The development of value-at-risk has driven much of bank risk management. No single risk metric has emerged with the same preeminence in insurance companies. Speakers will share the uses that their companies have made of different risk metrics, the strengths and weaknesses that they have found and the data collection and calculation procedures needed to support the use of their metrics.

CS-19 Risk Tolerances and Limits

Most risk management literature tells of processes and procedures that allow risk managers to set limits and maximize returns within the risk tolerances of the company. However, little has been written about how these risk tolerances are determined. Most companies have various sets of established risk limits. ERM techniques allow companies to view all of their risk limits on the same basis and to verify that there really is a consistent set of risk tolerance constraints that support those limits. Speakers will describe their experiences in assessing risk tolerances and translating those into risk limits.

CS-20 Insurance Risk Management/Measurement in a Conglomerate

Risk management does not exist solely at insurance companies. Find out more about how an insurance company is viewed from a corporate risk management perspective in light of not being the top level of a company. In addition, learn about aggregation, monitoring, managing and reporting of risks from multiple subsidiaries into a single entity.

The symposium will be held at the Washington, D.C., Capitol Hilton. Registration information can be accessed through the SOA Web site at *www.soa.org*, or contact Jacquenette Moody at *jmoody@soa.org* for a brochure.

Corrections/ clarifications:

In the chart on page 14 of the May issue, the correct date for the last item, "CAS/SOA Enterprise Risk Management Symposium," should be July 29-30, as stated in the article. We apologize for any inconvenience this may have caused our readers.

IAA health section formed

The International Actuarial Association (IAA) recently approved the formation of a new Health Section (IAAHS) to provide an international perspective on health actuarial practice, public and private health insurance and health policy matters. For the past two years, an ad hoc group of health actuaries from around the world has been advocating a forum for practicing health actuaries within the IAA.

The existence of this group and its efforts have been closely coordinated with and supported by the IAA Committee on Services to Individual Members (CSIM). Their initial effort was to organize the First International Health Seminar, in conjunction with the International Congress of Actuaries (ICA) in March 2002 in Cancun. The material from the health policy and health product topics discussed is available on the IAA Web site *www.actuaries.org* under "Health."

Following this very successful and well-attended health seminar, the informal group expanded into an ad hoc Health Interest Group (HIG) with 12 members representing 12 countries and one international agency whose main purpose was to prepare the formal establishment of the IAAHS. During the past year, HIG members have worked on a number of new projects:

- A Second International Health Colloquium, headed by Rainer Fürhaupter, will be held in Dresden, Germany, in April 2004 in conjunction with the annual meeting of DAV (Germany). A first bulletin with preliminary information and a call for papers currently are being circulated.
- An online health journal will be available on the IAA Web site as of the second quarter of 2003. Yair Babad is chairing this effort as the editor, and an international editorial board of actuarial health practitioners and academics with expertise in topics covered by the new journal has been recruited.
- The interim committee has been working closely with the IAA Secretariat to develop administrative methods and procedures to solicit section members, manage the online journal, effectively operate the section committee and communicate regularly with members.

The main lines of communication are the new IAAHS Web site, the creation of an IAAHS list server, liaison between IAAHS Interim Committee members and their national actuarial organizations and communication with IAA member organizations through the IAA Secretariat. More information is available on the SOA Web site at *www.soa.org/sections/healthsection_announcement.pdf.*

Second International Health Colloquium to be held next April in Dresden

The newly founded Health Section of the International Actuarial Association (IAAHS) recently announced its Second International Health Colloquium, which will take place in Dresden, Germany, on April 27-29, 2004.

The Colloquium is designed to cover topics that will create a thought-provoking, stimulating experience for health actuaries as well as other scientists and practitioners with an interest in health insurance and health issues.

Sessions are planned to cover both health policy and practical health insurance product issues. The colloquium format is very similar to that of the very successful First International Health Colloquium held in Cancun as a part of the International Congress of Actuaries (ICA) in March 2002.

Colloquium topics and call for papers

The IAAHS Organizing Committee invites authors to submit papers for presentation in Dresden that cover both the theoretical and practical aspects of the following topics:

Topic 1: Actuarial and Statistical Health (Insurance) Theory

- Health, disability and long term care demographics.
- Advances in modelling health insurance and health insurance portfolios.

Topic 2: Health Policy

- Future role for private health insurance in financing universal health care systems.
- Public-private health care financing partnerships.
- Roles of actuaries in designing and administering public health care financing.

Topic 3: Health Insurance Products

- Full medical expense coverage.
- Supplemental health products coverage, including VHI (voluntary health insurance).
- Long term care insurance.
- Income protection insurance.
- Public health insurance as a private sector product.
- Health insurance for retired people (over age 60).

Topic 4: Health Reinsurance

Topic 5: Genetics

Topic 6: Managed Care

Topic 7: Others

Instructions for authors

Authors are asked to submit a brief outline of their paper by Oct. 1, 2003, including the title and probable length, to:

IAAHS Colloquium Secretariat
c/o Deutsche Aktuarvereinigung e.V.
Unter Sachsenhausen 33
50667 Cologne, Germany
Telephone: (+49) 221-912554-0
Fax: (+49) 221-912554-44
E-mail: *iaahs2004@aktuar.de®*

Papers must be submitted in their final form in English, French, German or Spanish by Jan. 1, 2004. For more information, visit the IAAHS Web site at *www.actuaries.org/members/en/IAAHS/conferences/Dresden/provisional_program.pdf.*

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level. The travel time to ASA is just as important as the travel time to FSA.

Powills: Currently the thinking is that the ASA Course will take approximately a year.

Archer: "I would ... like us to end up with a system that allows a bright student to be an ASA within three years and an FSA within five to six years."

Louth: That could be fine, but how long does it take to get to the point where you start the ASA Course? We have to recognize that a lot of the really bright people we are trying to attract could be going off to other professions and financial focused careers. We want to make sure this is not too much longer than the travel time for those other opportunities.

Falk: One of the interesting aspects of the discussions about the ASA Course is that, while it's described as "a" course, it's actually being developed in terms of learning objectives for 12 separate modules. We expect many ASA candidates will begin taking modules early in their exam career. They don't have to wait until they've finished the preliminary actuarial exams. In particular, the early modules on the actuarial control cycle and discussions of practical problems could be handled by someone who is maybe a sophomore in college. And we expect that many of the actuarial schools would create one-semester courses that will cover the first four or five modules.

Louth: I am pleased to hear that there will be an opportunity to take advantage of the education system in the universities to help with the ASA Course. I think it is an excellent step forward to recognize the value of accessing professional educators to help us.

Cadenhead: As conceived, I think this is a great idea and a step forward in that it gives you exposure to a wide variety of areas without, as in the past, getting bogged down in details in areas where you might not ever have any need for that level of detail. But it gives you an exposure and gives you challenges where you'll be forced to think about and understand what an actuary does.

However, because this is so different and new, it seems like there will be a lot of resources required. My concern is that all the details need to be worked out very thoroughly in advance, so that when this is rolled out, there aren't any kinks. I see that as being a very big challenge.

Archer: I think, conceptually, this is great. The end result, if done well, could be that ASAs will be trained to think like actuaries—to have an actuarial frame of mind, rather than being pure mathematicians, as was the case when I took the exams. They'll come out with a strong mathematical background and a way of thinking that allows them to be able to apply actuarial concepts to real problems. I think that's very important. And they'll also have some exposure to a broad array of financial security systems, which also is very important. Our clients expect us not only to know about pensions—they obviously expect us to be expert in that area—but also to have some knowledge of other ways of providing financial security.

My concern is a travel-time one. I get worried when we're doing something this new, not just from the resource perspective that Bruce talked about, but that we don't really know going into it what the effect on travel time will be. I would personally like us to end up with a system that allows a bright student to be an ASA within three years and an FSA within five to six years. Anything that produces a longer travel time is too long in my opinion. And I do worry, even if some of the modules can be taken while in university, that with that many modules, it will end up stretching out over a long period of time.

Rudolph: As an employer, I want to answer these questions: What will student actuaries need to do in their 40-year career? What skill set should an actuary possess beyond that of a pure statistician or MBA? In other words, what makes us actuaries?

In my crystal ball, we'll be experts in statistical distributions, in contingent events and in discounting the future impact of those items. I think the ASA Course will

do a good job trying to tie all of that together. I'm especially pleased to see included some basic investment topics and the control cycle. That's what really makes you an actuary—you have a plan, see how it turns out, modify your expectations and come up with a new plan.

As we prepare for issues like fair value, which all practice areas are going to have

to deal with, we need to provide a balance for today's students between technical knowledge and travel time. While I think the ASA Course is a good compromise, there are implementation challenges.

Let me add two issues. First, if we have preliminary education that we're not testing, we need to make sure that the knowledge has been mastered. Specifically, I am concerned about topics like hypothesis testing and confidence intervals. I'm also concerned with how this all fits in with the Casualty Actuarial Society (CAS). We need to have these exams as coordinated as possible with the other North American actuarial groups.

Powills: That was a great segue into item No. 4 with respect to preliminary education. The plan, as it exists and was approved by the Board, is that, depending on subject, some will be prerequisite, some will be validated by experiences and others

will be examined. Max, you were alluding to some of this; that's where the CAS comes in. And other comments were made earlier with respect to filter exams and that type of thing. So, given statement No. 4, what outcomes do you anticipate and what are the benefits and drawbacks of proceeding in this direction?

Louth: From an employer perspective, until there is an actual proposal on the table for us to see how it is going to affect our students and the kind of students we are going to get out of it, the working groups should be proceeding to develop the complete plan. Noting that the filter exam is something that should be there or would be a preference would be input back to the group. In general, completing the learning objectives as the first step is a great concept, so that people can get a feel for what we think we're going to see from the new system.

Cadenhead: In this area, our main concern is what "validation by experience" actually means. There may be a wide variety of different standards at different colleges, so it's hard to say whether the required grade at one college compares to the same grade at another, and I think there's not going to be any attempt to measure that. Getting into the details of that, if we're going accept college courses, it's also been recognized that there have to be some good alternatives.

I think that an exam has to be an alternative for people, for example, who are already out of college and didn't take the course, or who took a course that covered part but not all of the material. You wouldn't expect them to go back and retake a course on the same topic. Some in my firm have suggested that, if we're going to have an exam anyway that measures experience, why not have that for everybody? People who have taken a course covering the topic should not have any trouble passing that exam. The goal might be that it's not necessarily as difficult an exam to pass as some of the other SOA exams, but tests knowledge in the area fairly thoroughly.

Archer: I'll echo some of what Bruce has said. To the extent that you allow validation by experience with no examination but have a longer list of topics that are required, you're, therefore, probably not increasing travel time for many. But, for those individuals who, when they went through college, weren't thinking that they were going to be actuaries and didn't take the right kinds of things, you could end up increasing travel time.

At one time, the list of topics the working group was looking to validate by experience was very, very long. It's gotten much shorter, but there's a temptation to say, "An actuary needs to know this and that and this. And since we don't want to increase the tests, we'll put it in the validation by experience group." But, for some people, the material will be examined anyhow and travel time could lengthen.

I have a secondary concern about the ability of the SOA or any organization in the United States to appropriately approve college courses for this purpose. There are so many colleges in the United States that it will be a very large job to undertake.

I'm also glad to see calculus taken off of the exams. I also think that probability and statistics could be treated as a prerequisite and be tested, in effect, in the other material. We should design questions in the other material that test the actual probability and statistics that people need to know, rather than testing all of probability and statistics as a separate exam.

Rudolph: Mike, you just made a comment that I hadn't thought about. We need to make sure that the first test isn't so big that it causes people to say, "I don't care if I passed or not; I'm not going through that again." We might find that the contingencies course has enough material for two exams. Then we're back where we started. We need to think that through very well.

A filter exam also provides a measure of initiative. A college student, especially at a nonactuarial school, can show initiative by researching the profession and taking an exam. Even if he or she doesn't pass, it's generally a good sign of interest and commitment.

The calculus exam is a very divisive issue in the profession. There are actuaries who measure their value by having completed

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the actuarial exams. We need to get past that. If it's appropriate to test something, then we should test it; but we should investigate alternative means as well. If someone doesn't hear about the profession until he or she is age 24, is it really fair to ask him or her to go back and take a calculus exam at that point? This will allow an older student to enter the profession and not extend travel time.

It is more important to ensure that students, even in high school, are exposed to the profession. That's something that will be addressed by the Actuarial Club Leadership Forum, a new group that's being set up to coordinate efforts of local actuarial clubs.

Cadenhead: I just want to come back to a point that Mike had made. I guess the plan is to review official course descriptions and see if they are closely enough lined up with what we want to require for experience. And I would recommend that we do a sample run. We could gather course catalogs from a number of colleges, without actuarial programs but which have produced some actuaries, and see if we can actually do this matching—how long does it take, how practical is it, how many of the courses that we actually review meet the criteria—so that we know that when this actually gets put in place if it's a practical thing to do.

Louth: I have one other comment in general about using validation by alternate means such as college courses. Looking around the world at different actuarial organizations and how they have approached it is quite interesting. The Australian model is an excellent one to review because they have embraced leveraging of the universities and their educational system to educate actuaries. There are some unique challenges within the United States with the number of institutions. Canada is more like Australia in that it has a more limited number of universities that would be involved. I do think that there's something to be considered there and I would not want us to throw it out because we are worrying about how we would do it. We can do it and get professional educators involved in helping us develop better actuaries for the future.

Archer: I just went on the Web and asked how many universities there are in the United States and got the number 5,758, and that's what I'm concerned about. Australia, Canada and the United Kingdom are not even in the top 10 in terms of number of universities by country. The 10th is China with 1,000. So the countries that have embraced this don't have nearly the logistical problem that the United States has.

Cadenhead: Also, in the United States, you're much more likely to get actuaries who haven't gone through actuarial training in college than you are elsewhere. Almost everyone that we hire is not from an actuarial program and so we want to make sure we address the needs of that group.

Louth: "The Australian model is an excellent one to review because they have embraced leveraging of the universities and their educational system to educate actuaries."

Rudolph: Based on statistics in the April issue of *The Actuary*, for 2002, 18.8 percent of exam-passers are outside of the United States and Canada. If we're talking about 5,000 plus colleges just in the United States and then throw in the rest of the world, how do you maintain consistency?

Falk: I don't think that the Board's decision regarding preliminary exams affects practice areas differently. It is of concern to everyone in terms of its impact on travel time and the attraction of the right candidates to the profession. One aspect of the approach that has been discussed at the working group that I think is a real positive is the likelihood that we'll use different methods of operating the exams than the SOA currently uses. At least some of the courses validated by examination, as well as the examination alternatives for some topics to be validated by experience, are expected to be "exams on demand," rather than the current approach of once every six months. That will have a very positive effect on travel time, especially among top candidates.

Cadenhead: We very strongly support the idea of exams on demand and hope that becomes part of the final design.

Powills: Our last statement reflects the need to develop high-quality study materials, and the Board strongly endorsed that. It is absolutely critical.

Cadenhead: We're absolutely in agreement that we need high-quality study materials

in place. Where I've heard complaints about the current system, probably the biggest is that the study materials for some exams were not developed with the actuarial exams in mind, so it was very difficult for students to make the connection between what they were studying and what they were actually doing at work. So I think this is very positive.

Overall, we like the direction and think we've covered the areas that need to be

covered. We're focusing more on what people actually need to do their jobs and the travel time issue.

Powills: How, overall, will that benefit you as an employer?

Cadenhead: From the employer perspective, we spend an awful lot of money and other resources on the exam process. It's a very large investment and we want to make sure that investment gives us a good return by producing people who are able to do the work and who have credibility with the public and with our clients. By better aligning the exams with what we do, we achieve that goal. If the exams are perceived as good training for what people do on the job, then we're less likely to look elsewhere to find that training.

Rudolph: I don't know of anyone who would want to develop substandard study materials, so I wonder if there is more to this statement.

Falk: From the ASA Course perspective, there really is a need to develop new types of study materials because we're going in a direction that current materials weren't intended for. So there will be a significant effort required to go out to academia and volunteers in order to produce the sorts of material and exercises that will be required for that course to be effective, as well as for the FSA courses.

Some of the material will have a long shelf life; other aspects of it, however, will probably require annual or even more frequent updating. We'll need an infrastructure put in place to accomplish that so that the materials don't get out of date. It's going to be a major effort for the SOA over the next few years.

Louth: Being involved in the education system has increased my awareness of the importance of having good education material. It seems to be very difficult to get that material developed by actuaries and I think it's even more difficult when you get to the leading-edge topics that people are more interested in. For the leading-edge items, people may not want to be giving out as much competitive information that, perhaps, lessens their advantage in the marketplace. So, by nature, we tend to get information that is not as current to work with in the exam process.

Powills: How do you overcome that challenge?

Louth: I'm not sure it is an easy one from an employer perspective, as much as working through the academic side, where people are doing research and publishing papers that are pushing the edges of actuarial practice. I believe this comes back to my concern that, in a volunteer system, having people that are given enough time—and, from an employer perspective, seeing the value in giving them time—to write research papers or study material for the education of all other actuaries. There's a challenge there, in terms of the time requirement from a volunteer system to help put this information together.

Archer: It's obviously important that high-quality study materials exist prior to embarking on a new system. Perhaps the Society can look at alternative means to develop those materials, other than a combination of a volunteer system and academia. There may be ways in which the various committees that provide some of their budgets for research can direct some of those budgets toward research projects that develop study materials.

Powills: Is there anything critical in terms of direction that still has not been addressed?

Falk: There is one thing that I am concerned about that isn't addressed by any of these Board decisions. I know that the SOA and the CAS agreed to develop their revised E&E programs independently, but I think it's very important that we try to get the two organizations to adopt the same exam structure for at least the preliminary exams, the first three or four exams. We seem to be putting too much pressure on students to decide which organization they want to try out for if we don't have common exams early in the process. And I'm concerned that that could reduce the ability to attract the right candidates.

Louth: Overall, the process is in the right direction. The Board decisions are confirmation that they want this process to keep going. More work and development needs to be completed so that we can get a little more specific about all of these things. There are some great concepts and ideas that need to be more fully fleshed out by the working groups. As those become more complete, I think it will get more people across the whole profession excited about where we are going.

Rudolph: In the current exam structure, professional development (PD) took a lot of heat for the way it was implemented. While the original concept was good,

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implementation just didn't work out. We need to think about what gets lost by taking out PD and make sure that things like networking with other actuaries are considered. One of the things that PD did, at least for some of the students that treated it seriously, was to plant the seeds of lifelong learning and continuing education.

I am also concerned about the impact on SOA seminars going forward. Will we be able to offer as many seminars under the new education system and depressed current economic environment? Although many companies have cut back on travel, they continued to support travel for students working on PD. We might find that we won't be able to justify as many seminars and they won't be as broad in nature. We need to consider that. It doesn't just affect E&E.

Archer: I've been thinking about the same thing Bill mentioned regarding the coordination with the CAS. It seems that there should be much more coordination between the two organizations early on in the process. I remember when I was a student many years ago and trying to decide which set of exams to take. It's not an easy decision for someone to make and, since we both have limited resources, leveraging those resources would make a lot of sense. Somehow this should be addressed.

Powills: Would each of you state the top two benefits to the employer and the top two drawbacks?

Falk: The top two benefits would be a likely shorter travel time and actuarial candidates who are exposed to practical applications earlier in the process. The only drawback I see at this point is the effort it's going to take to get this accomplished in terms of volunteers or finding outside resources.

Louth: I see an advantage to the ASA Course developing better actuarial people through the practical problem-solving approaches using the control cycle. That is going to be excellent. Hopefully, the travel time being shorter will attract more people from different university backgrounds. From a drawback perspective, the volunteer piece is a really big one. Other than that, it's finding a way to address or embrace this concept of the alternate education approaches, using college courses or things like that. It is a great concept; I am just not sure how we're going to be able to deliver. The idea is great, but there are a lot of issues that need to be resolved to make it work and work effectively.

Rudolph: "Students will be exposed to practical knowledge before ASA, so we will truly be able to say that an ASA is a generalist with the ability to perform in any standard actuarial field."

Archer: As benefits, the system should generate actuaries who have both practical knowledge and an actuarial frame of mind both early in the process and at the end of the process. And, if it works, the travel time should be reduced, which should enable us to attract more really good candidates as well as have them be productive actuaries in a shorter period of time.

One drawback is the large number of execution issues to make this happen. A second drawback is the flip side of one of the benefits—that, if this doesn't work, travel time may not actually decrease. We're working in an area where we're not 100 percent certain what the impact of the changes will be. If we get into a situation where travel time would be longer, that would obviously be a drawback. Although there's not a great risk, I think there is some risk of that.

Rudolph: Students will be exposed to practical knowledge before ASA, so we will truly be able to say that an ASA is a generalist with the ability to perform in any standard actuarial field. The second benefit is the higher exposure for risk management topics across practice areas. The timing is right. As practice areas are developing syllabi for each of the tracks, they have the opportunity to consider recent developments.

The two drawbacks from an employer's perspective are (1) the lack of a filter exam prior to interviewing for interns as well as for students entering full-time employment, and (2) the implementation issues, especially the volunteer needs. We really need to get firms on board to support this if it's going to work.

Michael A. Archer, FSA, is a principal with Towers Perrin in Parsippany, N.J. He can be reached at archerm@towers.com.

Bruce Cadenhead, FSA, is a principal with Mercer Human Resource Consulting in New York. He can be reached at Bruce.Cadenhead@mercer.com.

William J. Falk, FSA, is a principal with Towers Perrin in Chicago. He can be reached at Bill.Falk@towers.com.

Brian L. Louth, FSA, is vice president of RGA Life Reinsurance Co. of Canada in Toronto. He can be reached at blouth@rgare.ca.

Max J. Rudolph, FSA, is vice president and actuary of Mutual of Omaha Insurance Co. in Omaha. He can be reached at max.rudolph@mutualofomaha.com.

Completed experience studies

Life insurance

The Mortality Improvement Subcommittee of the Society's Committee on Life Insurance Mortality & Underwriting Surveys has completed its report. The committee's purpose was to explore life insurance company practices regarding the use of a mortality improvement assumption in the pricing of life insurance products.

The report can be found on the SOA Web site (*www.soa.org*) under "Research." For more information, contact Jack Luff, SOA experience studies actuary, at 847-706-3571 or *jluff@soa.org*.

Completed AERF research projects

The SOA Health Section and the Actuarial Education and Research Fund (AERF) funded a study entitled "Premium Death Spirals: Theory and Empirical Evidence," by Harry Sutton, FSA, FCA, MAAA, Roger Feldman, and Bryan Dowd. This project addresses the question, "Do high and low health risk consumers have different preferences for premiums and benefits?" The final research was presented at the SOA's 2002 Annual Meeting. The presentation is available on both the SOA Web site (*www.soa.org*) and the AERF Web site (www.aerf.org).

"Efficient Methods for Estimation of Reinsurance Parameters," by Vytaras Brazauskas, is another newly released study funded by AERF. The study compares empirical nonparametric and robust parametric estimators of different reinsurance premiums on the basis of two criteria: efficiency and robustness. The study report was published in the February 2003 issue of *Insurance: Mathematics & Economics*, Volume 32, Issue 1.

Completed CKER projects

The Committee on Knowledge Extension Research (CKER) sponsored several research projects that have been disseminated in various venues.

In "The Cox, Ingersoll and Ross Extended Model," Wojciech Szatzschneider of Universidad Anahuac, Mexico, proposes obtaining semiclosed formulas and computer programs to valuate interest rate derivatives including statistics of interest rate models in real and risk neutral worlds. The final project was published in the 2002 issue of the *Mexican Journal of Economics and Finance*, Vol. 1, No. 4.

In the April 2003 *North American Actuarial Journal*, Udi Makov and Zinoviy Landsman of the University of Haifa, Israel, define a new family of contaminated exponential dispersion loss models and examine their theoretical properties. The article, entitled "Contaminated Exponential Dispersion Loss Models," also is available online at *www.soa.org/bookstore/naaj03_04.html#contaminated*.

In "Valuation of Equity-Indexed Annuities under Stochastic Interest Rates," a paper slated to appear in the July 2003 *North American Actuarial Journal*, X. Sheldon Lin and Ken Seng Tan consider pricing and hedging techniques for equity-indexed annuities. The abstract is available online at *www.soa.org/bookstore/naaj03_07.html#valuation*.

Retirement systems

Many people approaching retirement are not knowledgeable about how best to manage their assets during retirement. In particular, the prospect of outliving one's assets and health care needs associated with aging are frequently overlooked.

In response, the SOA's Committee on Post Retirement Needs and Risks issued a call for papers (CFP) earlier this year seeking research to address post-retirement risks using traditional solutions or innovative new approaches. Abstracts submitted are currently being reviewed with the intention of planning an eventual symposium to present the papers. For more details, please see the complete CFP, titled "Managing Retirement Assets for Longevity and Other Risks," on the SOA Web site at *www.soa.org/research/call.html*.

38th Actuarial Research Conference

The Department of Mathematics at the University of Michigan will be hosting the annual Actuarial Research Conference (ARC) Aug. 7-9, 2003, in Ann Arbor. The 2003 ARC provides an opportunity for academics and practitioners from around the world to meet and discuss actuarial problems and their solutions. The conference also provides a forum for discussion of general actuarial education issues, particularly as they affect universities.

The deadline for making housing reservations is June 30, and the deadline for early registration fees is July 1. For more information, including the registration form, visit the conference Web site at *www.math.lsa.umich.edu/arc*, or contact Curtis Huntington at *chunt@umich.edu*.

Section Council to hold elections in July

SOA's 16 special interest sections will hold Section Council elections beginning in mid-July. Voting will be done electronically for all SOA members (Fellows and Associates) who belong to at least one section and have e-mail addresses on the SOA database. To make certain the SOA has updated your e-mail address, please check your information on the online directory at *www.soa.org*.

SOA section members who do not have an e-mail address on the SOA database will receive paper election materials in the mail. Voters will have 30 days to cast their ballots.

For technical questions related to electronic voting, please e-mail us at *elections@soa.org*. For general questions about the Section Council elections, contact Lois Chinnock at the SOA office at (847) 706-3524 or *lchinnock@soa.org*.

The SOA structure—Why should I care?

by Greg Gurlik

It always seems like a good idea to "keep people informed." The assumption is, as long as information is published somewhere or sent out in an e-mail, members will read and understand it. After all, if you print it, they will come, right? Well, since this is not "Field of Dreams," probably not. Most people only read something that affects them personally.

So, in this article about the work of the Implementation Task Force on Sections and Practice Areas (ITF), I want to answer that all-important question: "What's in it for me?"

The reason the SOA is implementing improvements and best practices and evaluating the structure is to provide more value to the members. We want to focus resources, both staff and volunteer, on the matters most important to you—your job, your employer and your professional accreditation. Here are three ways we expect these changes to add value to those areas of your professional life.

1. Roles and responsibilities of the various committees and sections are being defined to get a clearer picture of who is currently doing what. This will clarify the work that needs to be done, which will be of benefit to our members and the staff. With this information, we can see if there are overlaps or gaps and propose realignment of duties. This will make more efficient and productive use of our volunteers and staff, since groups won't be stepping on each other's toes. Clarification of roles and responsibilities also will help volunteers who decide to take on a bigger role have a clearer picture of what that role entails. There are a lot of things that actually get done within the SOA, and it would be better if everyone understood who was doing what.

2. Composition of the Board of Governors. In establishing the ITF, the Board was interested in creating a stronger link between the grassroots membership and governance. Thus, the ITF is evaluating ways to make practice area leaders more accountable to the members. Currently, the Board assigns leaders to work in various areas of SOA practice. Along with the Governance Audit Task Force, the ITF will be evaluating whether a new approach should be developed.

3. Financial considerations are being hammered out so that specific groups have access to the monetary resources needed to fund their initiatives. This won't provide an unlimited source of cash, of course, but we intend to reduce the barriers practice areas, in particular, face when they want to implement a project. If something needs to be done to support a particular area of practice, the SOA and its volunteers should be enhanced in their ability to respond.

This article is one of many phases of our communication plan, developed to improve the flow of information to our membership. The first objective is to make you aware of the improvements that are being made now.

Going beyond the life of the ITF, the ongoing goal will be to open avenues for addressing emerging and strategic needs so we can focus our resources on what's valuable to you. In addition to your feedback, we'll need to clearly define roles, establish a voice on the Board and create access to funds for each area of practice.

Some of these changes will take place "behind the scenes." Yet, the eventual impact will be on how effectively we can support your professional needs and development in your field of practice. The process will be an evolution, not a revolution. We are building on the current strengths, of which there are many, while trying to eliminate the barriers to productivity.

Each of the four practice areas (finance, health, life and retirement) and most of the sections have a representative on the ITF or on the Review Group (visit *www.soa.org/committees/itfspa.html* for more information). Your questions and comments are welcome, and we encourage you to seek out your representative or any ITF member. Your feedback is an important part of our implementation process.

Greg Gurlik, FSA, is director, long-term care product development, Northwestern Mutual, Milwaukee, Wis., and chairperson of the Implementation Task Force on Sections and Practice Areas. He can be reached at greggurlik@northwesternmutual.com.

Retirement monograph released

A new retirement systems monograph will be added to the SOA's online library at *www.soa.org/bookstore/mono.html*. Watch for "Design and Actuarial Aspects of Deferred Retirement Option Programs" to be released in mid-June.

SARS and actuarial modeling

by Harry Panjer

A few months ago, the light in the big "E" on the local Sears store went out. As a result, we started referring to that place as SARS. Little did we know that we had created a word that would soon have another origin and become one of the most frequently used acronyms in the daily news in several parts of the world.

The outbreak of SARS in late February, its identification and the subsequent actions in Hong Kong, Singapore, China and Canada, in particular, will become long-lasting case studies in epidemiology and other medical fields. At the time of this writing, the World Health Organization placed—and just rescinded—an advisory recommending against travel to Toronto. Those of us who live and work in the Toronto area are acutely aware of the impact of the news on the local economy.

We have already learned much about spread of SARS and the various possible responses. For example, early identification could have led to earlier control through isolation of the possibly infected population. Identification and isolation in Vancouver of a single case led to no spread whatsoever.

In Toronto, identification occurred later, after numerous health care workers and family members came into contact with Toronto's initial case, an elderly woman who had stayed at the now-infamous Metropole Hotel on Feb. 21. She seems to have passed the virus to others at a stage in the progression of the disease when she was most infectious. Yet, even then, the possible direct and indirect contacts could still be identified.

The experience of Hong Kong was worse. The disease had already spread through many untraceable contacts before it was identified, to a stage where it should be considered to have spread into the general population. And the situation in China seems to be worst of all. The disease apparently had a good start (possibly several months) in Guangdong province before the outbreak in Hong Kong was identified. It is clearly in the general population in April, and more extreme measures will be necessary to control the spread. On a personal note, I traveled in all key parts of China where the spread occurred during the past few months.

The spread of the disease seems to have followed a classical epidemic model. The various components include the length of the incubation period, the degree of infectivity of an infective person at various stages and the transmission rate.

Actuaries should remember a flurry of actuarial modeling that occurred in the mid-1980s after AIDS was identified. It began with a now-classic paper by Cowell and Hoskins and was followed by many others, including some that I wrote. Some of the papers used methods and models generally considered as special cases of "multistate models," which describe (usually through differential equations) how individuals move from state to state. In the case of SARS, the states could be "healthy and uninfected," "suspected," "probable," "confirmed infected," "healthy and immune" and "dead."

Most actuaries understand these ideas in the framework of multiple decrement models. However, multistate models are more complex (and more realistic). Multiple decrement models only allow movement in one direction. This isn't good enough in infectious disease modeling or in other important actuarial applications. For example, in disability modeling, persons can recover and move back to the active state from the disabled state. Similarly, in epidemic modeling, persons can recover and move back to the healthy state.

The subject of multistate modeling is included in the actuarial syllabus of most actuarial organizations but seems to have been largely lost in our own SOA syllabus as well as in the areas of research by our members. This contrasts with the United Kingdom, where the profession has been developing and using multistate models for a wide range of applications including modeling of disability and other health-related products in addition to the classic applications in AIDS.

Like AIDS, SARS is another case that can be used to illustrate the insight provided by multistate modeling. For example, the mathematical techniques can show under which combination of factors an epidemic can disappear over time. It can also show that, under certain conditions, the epidemic will reach a "steady state" with a predictable and level number of deaths from a new disease.

Finally, and most important, it can show the impact of various measures on disease progression. In SARS, face masks reduce the rate of transmission while isolation of a group limits the possible population of potential infecteds. Also, like AIDS, when financial values are attached to the differential equations, one can easily develop analogs of Thiele's differential equation, which forms the basis for reserving and pricing.

Some other lessons have been learned from SARS. Incubation periods are always initially underestimated. I became ill in early March exactly 10 days after returning from China. The incubation period was then estimated to be 2-5 days. I was safe! At least I thought so. Those doing the estimation had made these calculations only over a short period of time when there was no opportunity to see persons with longer incubation periods.

Similar kinds of biased sampling occurred with AIDS and in the study of left-hand mortality, both of which I wrote about in the 1980s, as well as in finance studies by Steve Ross explaining why investment managers all seemed to beat average market performance over a long period of time. (Think about this one.)

The future of SARS is somewhat predictable but highly dependent on interventions taken. At this point (late April), I predict that SARS will have disappeared from Toronto by June unless there is a newly imported case. I also predict that, by June, there will be newly imported cases to some other parts of the world that are currently unaffected. Finally, I predict that the situation in China will become worse before it becomes better, with the already large spread throughout the population.

I hope that actuaries become more skilled in the areas of multistate modeling and other techniques that better help us develop insights into processes and dynamics that affect risk. We should look at the SARS crisis as an opportunity to expand the horizons of actuaries (back to our roots in mortality).

The light at Sears is back on and it's been renamed. And I'm healthy again.

Harry Panjer