



The Actuarial Review

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From the President

Think Small!



by **Robert F. Conger**

In this day and age, bigger seems to be perceived as better. Companies acquire and merge with other companies to create mega-organizations. Retailers seek to be the largest in their market. Trade journals list the top companies by size. Growth is one of the key financial measures by which success is evaluated.

Supply and demand factors—not growth for growth's sake—indicate that the CAS will, and must, continue to grow as well. On the demand side, the North American insurance and re-insurance industry and its supporting bureaus and consulting firms, which collectively employ the vast majority of our members today, appear to have a healthy appetite for more actuaries at virtually all levels. And there are opportunities for us to develop additional actuarial roles, both inside the financial services industry and in other industries that are challenged by business risk (that is, *all* industries).

We hear calls for us to grow our membership around the world. Prudent regulators and insurance businesses in various countries, particularly those with emerging economies and newly developing insurance industries, are demanding people with the types of

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CAS Officer and Board Candidates Announced

Election Changes Implemented

ARLINGTON, Va.—The CAS has released its roster of candidates for officer and board positions. Candidates for president-elect are **Sholom Feldblum** and **Mary Frances Miller**. Candidates for board positions include **Ginda K. Fisher**, **Alan M. Hines**, **Gary R. Josephson**, **Clive L. Keatinge**, **David J. Oakden**, **Patricia A. Teufel**, **Robert F. Wolf**, and **Oakley E. “Lee” Van Slyke**. Ballots will be sent to Fellows on August 23. All ballots must be received by September 23 in order to be counted.

In March 2002, the CAS Board reviewed and modified several elements of the CAS election process focusing on nomination and petition processes, nominating committee

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Actuarial Roundtable Discussion—Part Two

The State of Casualty Actuarial Science Today

by **Arthur J. Schwartz**

In February, four distinguished actuaries and I got together by conference call to discuss the state of casualty actuarial science today. Our panelists include:

Glenn G. Meyers works for Insurance Services Office in New Jersey, has written many papers on risk loads, catastrophe ratemaking, and capital allocation, and many other topics. He has served the CAS on the Examination Committee for several years and on a number of CAS research committees.

Howard C. Mahler currently lives in Boston, teaches actuarial exam seminars, and consults. He has written papers on a variety of topics including workers compensation, credibility, experience rating, retrospective rating, and underwriting profit models. He served for a dozen years on the CAS Examination Committee, including three years as chairperson of the committee.

Sholom Feldblum works with corporate financial models for Liberty Mutual in Boston. He has written numerous papers explaining actuarial concepts, helping students learn these topics efficiently.

Stephen W. Philbrick is with Conning Asset Management, a division of Swiss Re, in Baltimore. His paper on credibility concepts won the Woodward-Fondiller Prize. He has been active on numerous CAS committees, including chairing the Committee on Principles, which seeks common principles with other actuarial organizations. He writes the “Brainstorms” column for *The Actuarial Review*, which discusses interesting new applications of actuarial science.

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Actuarial Credibility

by Walter C. Wright

Enron, Global Crossing, WorldCom, and on and on. It seems as though the first years of the 21st century may be remembered more for financial fraud than for the war on terrorism. Actuaries should give serious thought to these financial fiascoes, and ask themselves what they can do to avoid getting caught up in similar situations.

About 30 years ago the major scandals, as I recall, were Equity Funding and Watergate. The Equity Funding scandal was memorialized by the movie *Billion Dollar Bubble*, starring James Woods in the role of the actuary. The CAS shows this movie as part of the Professionalism Course, so many of our members are probably familiar with the case. For those who are not familiar with it, suffice it to say that Equity Funding was an egregious attempt to pump up earnings reports by recording fictitious life insurance policies. It began with the recording of a small amount of

“Recognizing the right thing is easy; doing the right thing is the challenge.”

life insurance premiums that had not actually been written, and snowballed so that in each successive quarter more and more fake policies were added to the reported financial results. A special team of employees would even meet to create hard copies of underwriting files whenever the auditors requested policies that did not actually exist. When the bubble burst about 64,000 policies, roughly half of the company's business, were found to be fake.

For the young actuary in the early 1970's, the lessons of Equity Funding were fairly simple: Don't falsify records. Don't yield to peer pressure to become part of a conspiracy. But the world has become more complicated, and one wonders how much protection these lessons offer to the actuary of the 21st century.

Consider the column "Ethical Issues Forum" in this issue of *The Actuarial Review* (see page 10). The dilemma posed to readers is straightforward, and undoubtedly a common one. An actuary is instructed by his or her boss, who is also an actuary, to prepare a rate filing using assumptions with which he or she disagrees. Should the subordinate refuse to do so, even though the filing will go out with the boss's signature?

My immediate response was "the subordinate should do what the boss requests." I think that was definitely the right response in the world of the 1970's and I think it is still right in 2002, but I am no longer quite so sure. What about the company accountants at WorldCom who accepted their boss's judgment that certain line expenses should be considered as capital investments? Should they have blown the whistle? Were there any lower-level employees at Arthur Andersen's Houston office who should have balked at the audit partner's instruction to shred Enron documents?

Or consider the fact that Arthur Andersen was found guilty because one of the firm's lawyers recommended deleting a remark that was critical of Enron's accounting practices. The public may easily accept the conclusion that this is evidence of collusion. But how many consulting actuaries have revised actuarial reports so as not to offend a client? And how many company actuaries have revised an internal report so as not to upset the CFO or CEO? I bet an honest show of hands would indicate that virtually all of us have. Will this change in the current environment? Should it change?

One lesson of Watergate was: If you are the president and get caught at something, don't lie about it to the public. A politician as shrewd as Nixon failed to realize this, and about 25 years later Clinton repeated this mistake. Political scandals do not appear to have changed much over time. By contrast, some would argue

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Boston's Back Bay Hosts 2002 CAS Annual Meeting

by François Morin

Come join us at the Boston Marriott Copley Place for the 2002 CAS Annual Meeting. The meeting will begin on Sunday, November 10 and conclude on Wednesday, November 13. The featured speaker will be David Gergen, one of the most sought-after political minds in the country. He has served in the White House as an adviser to four presidents: Nixon, Ford, Reagan, and Clinton. He currently serves as editor at large for *U.S. News and World Report*.

Four general sessions are currently planned. The first general session, "Operating in a Post-Enron World: Implications for Property/Casualty Insurance Companies," will explore issues related to the need for disclosure and independence as well as how the evaluation of loss reserves for companies is being affected by this increased level of scrutiny. A second general session, "Shareholder Value: Truth or Consequences,"

will compare a company's duty to policyholders with its duty to shareholders. This session will also contrast the short-term focus of shareholders and Wall Street with the need to provide long-term financial solidity. "What's the Problem with Homeowners Insurance?" will try to uncover some of the difficulties companies have had with this line over many years. Finally, the closing session on Wednesday will consider "What Will Federal Chartering of P&C Companies Do to their Industry and to the Actuarial Profession?"

Concurrent session topics being planned include a recap of the last 10 years of homeowners insurance in Florida, the state of the professional liability market, a chief risk officers'

roundtable, nursing home professional liability, trends and issues with D&O,

developing a successful actuarial student program, and the state of the California workers compensation market. In addition, the Conference of Consulting Actuaries will offer two sessions: "Good Ways to Communicate Bad News," designed to help actuaries communicate results; and "Practicing Defensive Actuarial Medicine," aimed at minimizing professional liability exposure.

On Tuesday evening, members and guests will be invited to the New England Aquarium for a special dinner.

More detailed information on the CAS 2002 Annual Meeting will be mailed to members and available online at www.casact.org soon. ■



Featured Annual Meeting Speaker, David Gergen

Election Results

From page 1

composition, candidate information, and voting. In a letter to Fellows on April 18, 2002, CAS President Robert Conger outlined these changes.

Nomination and Petition Processes

As in the past, Fellows become official candidates for the board or president-elect by the board's Nominating Committee or by formal petition. Petitions now require 22 signatures (1 percent of the Fellowship census) for a board candidate and 44 signatures (2 percent of the Fellowship census) for a president-elect candidate. Petitioning closed on June 5, before the Nominating Committee developed its slate. The CAS does not identify whether candidates are placed on the ballot by petition or by the Nomination Committee. The Nominating Committee may select

one additional candidate for president-elect and up to four additional candidates for the board. As in the past, there is no petitioning process for the vice president positions, however, the Preferential Ballot was expanded to invite Fellows to suggest vice president candidates for consideration by the Nominating Committee.

The Nominating Committee Composition

In 2003 and after, the Nominating Committee will consist of the two most recent past presidents; one past board member; and four members, two who have been Fellows for at least ten years and two who have been Fellows for less than ten years. The board approved a transition plan for the 2002 Nominating Committee. The committee for this year consists of two members, one who has been a Fellow for at least ten years and one who has been a Fellow for less than ten years.

Campaign Communications

Candidates on the ballot for the board and president-elect will provide a résumé, a short statement on "Why I want to serve," and a short statement identifying issues that are of special interest to the candidate and any position that the candidate may have on those issues. The candidate information will be posted on the CAS Web Site in a new section called "Meet the Candidates." Fellows will be able to send questions to candidates via the Web site between August 1 and 15. Candidates' responses will be posted on August 23 in conjunction with the ballot mailing.

Voting Changes

The board will continue to use a secret ballot, but beginning this year, all vote counts will be released to the membership.

For the complete letter, please visit www.casact.org/aboutcas/elections/0402changes.htm. ■

CAPM Can Reflect Catastrophes

Dear Editor:

A number of panelists in the “Actuarial Roundtable Discussion” from the May 2002 issue of *The Actuarial Review*, stated that financial theories do not adequately deal with catastrophe risk. I disagree with that claim. We have financial approaches in our own actuarial literature that have begun to deal with the skewed nature of catastrophes. In our *Proceedings* paper, “The *n*-Moment Insurance CAPM” presented at the May 2001 CAS meeting, **Tom Kozik** and I developed a financial model that captured the effects of skewness and higher moments in the equilibrium premium formula. Further, the skewness premium is significant. Only systematic skewness, which is not diversifiable by investors, is considered relevant. Many of the criticisms with the current approaches discussed by the panelists such as reliance on mean-variance analysis and the inclusion of nonsystematic risk were overcome with this model. The criticism of the limitation of mean-variance analysis for measuring catastrophe risk is not new; Yahuda Kahane pointed out this limitation in his 1979 *ASTIN Bulletin* article where he recommended the CAPM be used to develop insurance industry risk premiums. It is interesting that we are just now addressing the issue. I hope the next major steps in this area of study for the insurance industry will be performing empirical estimates of our industry’s cost of skewness.

Aaron Larson, FCAS

The Future of Actuarial Education

Dear Editor:

The May 2002 *Actuarial Review* contains an excellent “Actuarial Roundtable Discussion” on the current state of casualty actuarial science. I would like to make a couple of comments on this discussion.

First, **Sholom Feldblum** states, “we [actuaries] are not sufficiently aware of the developments in related fields such

as economics and finance.” In response to a question regarding potential changes to the syllabus, Feldblum goes on to state, “The Modigliani and Miller (M&M) propositions are important ... This material is not on the Exam 8 syllabus, but it is the foundation of financial theory on the capital structure of corporations.”

“It seems to me from reading the Roundtable Discussion that there are two very different viewpoints on the future of actuarial education.”

I agree completely with this sentiment. In particular, I believe there are many useful potential applications of the M&M propositions to actuarial work. On the SOA side, Jeremy Gold has used the M&M ideas to analyze the design and investment strategy of cash balance pension plans. Also, Luke Girard has used the M&M propositions (in a recent *NAAJ* article) to unify the various approaches to life insurance valuation. On the P&C side, I have used the M&M propositions to demonstrate the impact of an insurance company’s investment strategy on its market value, and to point out several pitfalls in the common application of IRR ratemaking models. I think there are many more applications of M&M still to come.

Second, Feldblum states that “Financial theorists deal with systematic risk; shareholders can diversify their risk. The actuarial view is to look at total risk.” Again, I agree. I’ve made the point in a previous CASNET post that the recent “Risk Premium Project” overemphasizes the similarity between financial and actuarial pricing methods. Feldblum points out the most fundamental difference between these two views: the financial methods recognize

shareholder diversification, whereas actuarial methods tend to focus on total volatility of the insurance company’s results in isolation.

Lastly, **Stephen Philbrick** asks the following two questions: (1) “is there a favorite or recommended text on finance?” and (2) “what is important on the cost of holding capital?” Regarding the second question: from a purely financial point of view, there are three significant costs to a P&C insurer of raising and holding capital—double taxation, agency costs, and issue costs (including asymmetric information). In a recent call paper, I described each of these costs in depth, and argued that these costs are typically overestimated in the JRI literature (especially double taxation).

Regarding Philbrick’s first question, the Brealey/Myers finance book from the Exam 2 syllabus is still the best MBA-level finance book on the market. There is very little, if any, mathematics in this book, but the authors provide an extremely well chosen list of references at the end of each chapter for those interested in the underlying math. We would be well served to add a few of the most important actual finance papers to the Exam 8 syllabus, including several of the papers referred to by Feldblum in the Roundtable Discussion (namely, Merton Miller’s “Debt and Taxes,” Stewart Myers’ “Determinants of Corporate Borrowing,” and the Jensen/Meckling paper on agency theory).

It seems to me from reading the Roundtable Discussion that there are two very different viewpoints on the future of actuarial education. It has been my experience that many practicing actuaries hold a disdainful view toward much of modern finance theory (especially efficient market theory and equilibrium asset pricing theories); I think it’s great to see a prominent actuary like Feldblum taking such a pro-finance position.

Trent R. Vaughn, FCAS

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Proud to Be an Actuary

by Gail M. Ross

Forgive me if I revert back to my high school cheerleader days, but I feel actuaries have something to cheer about! The most recent *Jobs Rated Almanac* (Sixth Edition 2002, by Les Krantz) rates “Actuary” as the second best job in the U.S.—up from fourth position in the 2000 edition. This year we are exceeded only by “Biologist”—due to the high demand for their services in the areas of bioengineering, genetically altered agriculture, and defenses against chemical warfare. “Financial Planner” (last year’s number one) ranked third this year. “Computer Analyst” and “Accountant” round out the top five.

You might recall that when the first edition of the *Jobs Rated Almanac* was published in 1988, “Actuary” was ranked number one and our popularity

skyrocketed (well, that may be stretching it a bit—but it did make for some interesting cocktail party discussion)! The ratings are based upon a combination of six criteria (our rankings for each among the top five rated positions are shown in parentheses):

- Work Environment—both physical and emotional (2)

“...life’s so much easier when we try to be positive.”



- Income Levels—including growth potential (3)
- Career Outlook—the quality of the job’s future (5)
- Physical Demands—including length of workday (1)
- Security—considers physical safety and unemployment possibility (5)
- Stress—demands and crises inherent in the job (1)

I know there are those in our Society who might scoff at this *Almanac* and the associated ranking—after all, it is a rather simplistic diagnostic model and certainly can’t measure up to sophisticated stochastic models we develop. I, however, am proud of this ranking and the fact that we’ve never been ranked lower than fourth since this book was published. CareerJournal.com and CollegeJournal.com (free Web sites from *The Wall Street Journal*) are affiliated with the publication of this book and present these ratings on their sites—what a great way for getting the message out that the actuarial profession is highly valued.

I must admit there are times when I read postings on CASNET and the CAS Discussion Forum and wonder about the future of our profession. Luckily, those moments are short-lived. How ironic, that we’ve got outside sources touting our profession and many of our

own members sound like they would rank us in last place (250) in the *Almanac*.

At the 2002 CAS Spring Meeting, I was fortunate to meet a young woman who had recently received her Fellowship. She asked if she could offer Bob Conger and me her views on a few topics. My immediate thought was that she was going to complain about something—sadly these days, it seems as if many opinions offered to us are complaints. Boy, did I misjudge the situation! Without going into specific details, our conversation was very positive.

She told me that although it took her nearly ten years to achieve Fellowship, she felt the exam process gave her the tools she needed to excel in this profession. She is proud to be an actuary and encouraged me to stress to the board and EC that we should keep our standards high. What an uplifting evening that was for me—to hear some positive expressions regarding our profession—from within the ranks!

That conversation, and the number two *Jobs Rated Almanac* ranking, helped to focus me in on two things.

First, being an actuary is a great profession and one we should continually take pride in and strive constantly to improve. The world continues to evolve and I realize there are many changes we need to make so our profession remains prestigious and in demand. What profession doesn’t face those same challenges? But I would encourage each of you to take pride in how the world perceives us.

Second, life’s so much easier when we try to be positive.

So how about this proposal—we’ll make a new rule for everyone that posts on CASNET—for every negative comment that is made, the writer has to offer a positive statement about our profession! Oh well, maybe the old cheerleader in me has gotten a little out of control, but it’s worth a shot! ■

In My Opinion

From page 1

gue, financial scandals have become more complicated and more difficult for today’s actuaries to avoid.

Adherence to actuarial best practices and statements of principles will go a long way in keeping us out of trouble. But the best advice, as always, is simply to “do the right thing, not the easy thing.” This is what Dennis Kozlowski, the former CEO of Tyco, told recent college graduates shortly before he was indicted on charges of tax evasion. Recognizing the right thing is easy; doing the right thing is the challenge.

We should take pride in the fact that the actuarial profession is guided by broad principles rather than by numerous rules. This forces us to rely more on asking, “What is right?” than “What will the rules allow, and how much can we stretch them?” This gives us all an obligation, to our profession no less than to ourselves and our clients, to do the right thing. ■



Photo Credit: Bill Sandke

Scenes From a Meeting: The 2002 CAS Spring Meeting

CAS members met at the Hotel del Coronado near San Diego for the 2002 Spring Meeting. Clockwise, from top left: CAS President **Bob Conger** awards **James Berquist** the 2001 Matthew S. Rodermund Service Award; **Irene K. Bass** urges new members to be not just actuaries, but creative actuaries, in her address to new members; Conger and board member **Janet Nelson** share views during a break; Conger and featured speaker, James K. Glassman, chat before Glassman's presentation on the state of the world and the three "izations"—globalization, financial democratization, and economic liberalization; new Fellow, **Edward Kofi Gyampo** and his daughter enjoy the day; and CAS Vice President-Programs & Communications **Chris Carlson** reminds attendees to have their photos taken for the online membership directory.



Photo Credit: Kwok C. Ng

Is this a picture of: a) Hua Mei, a panda at the San Diego Zoo, or b) a Spring Meeting attendee who learned too late that the Medical Malpractice session was rescheduled?

From the President

From page 1

knowledge, expertise, and capabilities that a CAS education instills.

On the supply side, universities and their graduates are showing a lively interest in the actuarial profession. Many numerically skilled individuals were attracted to the technology industries in the late 1990's, and financially oriented job opportunities of all sorts will continue to attract these people. But the CAS, CIA, and SOA are seeing a very strong growth in the numbers of candidates signing up for the early exams. People are realizing the benefits of a stable, challenging, rewarding career in a long-standing industry that faces some interesting and significant challenges and opportunities. In May 2002, for example, the number of candidates for Exams 1 and 2 increased by 39 percent and 21 percent, respectively, from one year earlier.

All of this is good and healthy for our profession, and we must do our part to assure that both supply and demand remain strong, and that both sides of

the supply-demand equation are having their needs met.

The view at a personal level through the eyes of an individual member may be a bit different, however. I was chatting with one of the new Fellows at the San Diego meeting this May as we entered the reception the first evening. He looked at the crowd with a bit of trepi-

"The way to make the CAS your own is to start with a small, bite-size piece of the organization."

dation, and confessed his concern about getting to know everyone.

The answer, of course, is that you don't start out by trying to know everyone. The way to make the CAS your own is to start with a small, bite-size piece of the organization. Become active in one committee, a task force, or your local Regional Affiliate. We have opportunities and needs for members in all sorts of roles, with a call for varying levels of time commitment, travel,

and activity types. This includes, of course, the Exam Committee, but also various program-planning functions, publications, research, and outreach activities. Likewise, the Regional Affiliates rely entirely on their volunteer members to conduct all of their activities.

The key word in the preceding paragraph is "active." Perhaps you will start your next CAS volunteer role out of a sense of duty, or because someone recruits you to help out. These are fine reasons to get started. Based on the experience of hundreds of volunteers who have come before, if you take on a volunteer task as an *active* participant, you will find that you gain more than you put into it. You will be shaping and influencing that part of the CAS. You will be creating opportunities for yourself to get involved in other parts of the organization. You will be getting to know some terrific people, people you will be happy to count as your business acquaintances and friends. They, in turn, will introduce you to their business associates and friends and you will find that the CAS becomes "we" rather than "they." ■



Actuaries Abroad

Across the Atlantic

by Paul Klauke

The Casualty Actuaries of Europe (CAE) were fortunate to have CAS President **Bob Conger** start off its Spring Meeting, which was held on May 9 in London. Bob spent most of his all too brief time with us talking about education. Some members were surprised to hear the average number of exam sittings was 15 for Associates and 18 for Fellows.

The value of the new online courses was discussed and a suggestion was made to advertise in the various international actuarial publications, such as *The Actuary* in the U.K. Offering a discount in some of the poorer countries was also suggested.

Bob encouraged the continuing expansion of casualty actuarial work beyond ratemaking and reserving; for instance, Australian actuaries are playing major roles in the fields of genetics and resource management. He talked about his recent trip to China, and how the CAS can play a key role supporting the very eager and ambitious students in that vast and developing country.

Simon Pollack, a Fellow of the Institute of Actuaries (U.K.), presented

his talk entitled "The Capital Continuum, from Risk to Reward." He immediately received our full attention, suggesting "other things being equal, the ideal level of capital for shareholders is zero." After a lively debate, Simon went on to define capital determination to be "putting a value on risk." He pointed out two views of setting capital: intrinsic (actuarially set) and extrinsic (the "market" value). The actual setting of capital will often be based on an external view of risk: possibly regulatory (16 percent of premium), economic (Value at Risk or VaR), or competitive (market price or rating agencies).

Simon suggested that actuaries take this "given" level of capital and make economic sense of it, using tools such as VaR (the standard in the banking industry), Expected Policyholder Deficit (Moody's and Standard and Poor's), and Utility Theory.

Simon provided some great food for thought, which was heartily partaken, both during the session and at the local pub afterwards.

Before passing the gavel to the new CAE President **Alessa Quane**, outgo-

ing president **Paul Klauke** presided over the election of the new vice-president. After all the hanging, dimpled, and pregnant chads were counted and recounted, the dust settled and London-based **Christy Olson** was declared winner by a landslide. Since the election, however, Olson had a change in professional responsibilities, and has decided to forego serving her term. **Doug Lacoss** has kindly agreed to step in and serve the members as vice-president in Olson's place.

Vicky Grossack will continue her role as secretary/treasurer for a second year. Grossack has done a great job establishing our Web site, www.casact.org/affiliates/cae/index.htm, and the social network (on the Web site), which is a reference for actuaries who would like to get together with other CAS members while travelling abroad.

The CAS is alive and well across the Atlantic. The next formal meeting of the European Regional Affiliate will be at the General Insurance Research Organizing Committee convention, which will be held October 8–12 at the Hotel New York, Eurodisney, Paris. *Tant mieux!* ■

Web Site News

CAS Expands E-Commerce Capabilities

The CAS Web Site has recently expanded its e-commerce options into two new areas: registering for exams and ordering publications.

Candidates may submit examination registrations online for CAS-administered Exams 5-9 beginning with the Fall 2002 session. An Electronic Signature Authorization Form (ESAF), available in the "Exams" section of the CAS Web Site, must be submitted before registering online. By signing the ESAF, the candidate agrees to be bound by the rules and regulations related to the examinations. It also provides a sig-

nature of record for comparison to the signature on the individual examination envelopes. Candidates should allow three weeks for processing and activation of their username and password before registering. (Candidates who intend to register online for Exams 6 or 9 need to submit their ESAF before August 29.) In addition, this username and password will allow access to other sections of the CAS Web Site, including the searchable membership directory.

Publications can now be ordered in the "Publications" section of the CAS Web Site using a new publications

"shopping cart." The online shopping cart makes it easy to order examination study kits, the *Proceedings* on CD ROM, and other products by accepting orders and payments directly through the Web site. Orders can still be placed by mail or fax using the PDF order form located in the "Publications" section of the Web site.

These new offerings represent another step in CAS' commitment to improving its online services by expanding e-commerce. ■

From the Readers

From page 4

Unification Redux

Dear Editor:

The subject of unification is in the air again. I understand **Clive Keatinge** plans to run for the CAS Board. His vision touches on many important areas, but perhaps the most controversial relates to unification. If I understand correctly, his position is not simply pro-unification, but in favor of studying the unification issues.

I remember the last time the issue was seriously raised. I remember trying to have an open mind about the subject, but feeling generally, albeit not strongly, opposed. As I recalled my main reasons for opposition, I realized one was based on a flawed assumption, and the other based on a fact no longer true.

When I was passing my early exams, the SOA was far larger than the CAS, roughly by a factor of ten. (Despite what people in my office believe, the numbers were not recorded on clay tablets.) I had little contact or involvement with the SOA, so my vague impression was a monolithic organization of ten thousand life actuaries. Unification seemed to provide some benefits, but I was concerned that our smaller society might get lost in the larger organization.

Since then, two changes have occurred. The CAS has grown faster than the SOA, so the relative sizes are much different. More importantly, I've had much more contact with the SOA, primarily as chair of the CAS Committee on Principles, which has been working closely together, for almost forever it seems, with the SOA Committee on Principles. We are working jointly to write a document "Fundamental Principles of Actuarial Science." As part of that exercise, I've come to realize that the differences within various subsets of the SOA are as significant as the differences between life and casualty actuaries. On more than one occasion, we've tried to craft an example of an actuarial issue that would work for both life and casualty. In several instances, the life and casualty people would be happy with the example, but one of the

pension people, or health people, or financial people would point out that the example was problematic in their areas.

I looked at the *Directory of Actuarial Memberships* to get a sense of the relative sizes of practice areas. Caution should be used with these numbers, as I understand that one can select more

"...the casualty actuaries would not get lost in a much larger organization, but would become one of several important practice areas..."

—Stephen Philbrick

than one practice area, and not all members are in the list, but the results are still interesting. To the nearest 500, the counts are:

Life	4,500
Retirement	5,000
Health	2,500
Financial	1,000

With CAS membership at approximately 3,400, it became clear to me that the casualty actuaries would not get lost in a much larger organization, but would become one of several important practice areas, and not much smaller than the largest of these practice areas.

I'm in agreement that it is time to revisit the unification issue.

Stephen Philbrick, FCAS

Silence is Golden

Dear Editor:

Casualty actuarial science is an eclectic discipline that has gleaned much from other sciences. Psychoanalysis now offers a paradigm with application to the Casualty Actuarial Society.

A famous case study concerns little Jesse, who did not speak for his first six years on earth. His parents took him to doctors and he passed all the physiological examinations. Psychiatrists administered barrages of evaluations and he passed them all, except for those requiring oral response. Apart from not

talking, Jesse led a normal life. Every morning he would have toast with jelly and chocolate milk, then spend a fairly normal day playing with his dog, reading, painting pictures, and so on. One morning, when he was about eight, he got up for breakfast, sat down to eat, and exclaimed: "Mom, you burned the toast!" His mother grabbed him and raced to the psychoanalyst to report that he was now speaking. The psychoanalyst asked Jesse why he chose to speak that morning. Jesse's reply was that: "Until now things were pretty good!"

Not having written a letter to the editor in many years, I would now like to point out that the CAS *Yearbook* no longer has a spiral binding and no longer opens to lie flat.

Alfred O. Weller, FCAS

Managing Editor's Note: Al Weller suggests that the Yearbook has changed for the worse, but we respectfully disagree. The old Yearbook used to lay flat, which was nice, granted. But the back cover kept slipping off, which was terribly annoying to some people. Like morning toast that is less burnt now than it used to be, the Yearbook has improved. ■

CAS Continuing Education Calendar

Bookmark the online calendar at www.casact.org/calendar/calendar.cfm

September 6–23—Online Course: Financial Risk Management: The Building Blocks of Financial Risk Management, CAS Web Site

September 23–24—Casualty Loss Reserve Seminar, Crystal Gateway Marriott, Arlington, VA

September 24–25—Seminar on Asset Liability Management and Principles of Finance,* Crystal Gateway Marriott, Arlington, VA

September TBD—Seminar on Reinsurance,* TBD, New York, NY

October 7–8—Special Interest Seminar on Catastrophe Risk Management, Sheraton Buckhead Hotel, Atlanta, GA

November 10–13—CAS Annual Meeting, Marriott Copley Place, Boston, MA

* Limited Attendance

Einstein and Economics

E=mc²: A Biography of the World's Most Famous Equation by David Bodanis
(Berkley Publishing Group, 2000, \$14)

The Return of Depression Economics by Paul Krugman
(W. W. Norton & Company, 2000, \$12.95)

Reviewed by Allan A. Kerin

Our first two book reviews concerned books about technology and history. In this issue I'd like to include other topics by briefly reviewing two books, one a popularization of physics and the other a discussion of current macroeconomic problems. I found both books to be well written, entertaining, and informative.

E=mc²: A Biography of the World's Most Famous Equation attempts to place Special Relativity in the context of the last three and a half centuries of scientific thought. The book discusses the establishment of modern concepts of matter, mass, and energy through the work of Newton and eighteenth and nineteenth century figures such as Lavoisier, Du Chatelet, Faraday, and Maxwell. This work is presented as the background for the connection between mass and energy described in Einstein's equation. The book then describes the equation's significance in the development of science and technology throughout the twentieth century.

Bodanis often vividly describes the historical environment (political, social, and religious) of scientists, as well as some interesting facets of their lives and personalities. Lavoisier's execution during the French Revolution (not for his beliefs, but because of connections with the old regime); Newton, Faraday, and Einstein's religious beliefs; Fred Hoyle's truancy from a strict rural grammar school; and Du Chatelet's relationship with Voltaire bring an additional dimension of interest to this book. Other notable stories include the largely successful appropriation of credit for German Jewish physicist Lisa Meitner's discoveries by her colleague and former personal friend, the opportunistic Nazi sympathizer Otto Hahn; the fate of the British and Norwegian

commandos who attacked the Heavy Water facility at Vermork, Norway; and the debate among Allied military and political leaders about the use of the atom bomb.

I found this book to be a very interesting and understandable popularization of modern physics and chemistry. As someone with a meager background in these subjects, I can't comment on its accuracy. I invite our readers to write to *The Actuarial Review* with their opinions.

The Return of Depression Economics describes several economic crises of the 1990's. Published in 2000, it describes recent history, but omits developments during the last two years. The book deals with paradoxes, such as the failure of seemingly well-run economies such as Hong Kong, and the decade-long stagnation of Japan. Professor Krugman is very concerned that problems such as deflation and lack of aggregate demand can push economies into long-term stagnation and even depression. He feels the post-World War II successes, in using fiscal and monetary policy to avoid long-term declines in aggregate demand, have led many

policy makers to ignore the continuing threat such declines pose to economic growth and prosperity. He feels we have the tools to avoid depressions and long-term stagnation, but may be too slow to use them, because we are overly concerned about igniting damaging inflation. We are naturally more sensitive to the problems of recent decades than to those of more than half a century ago, but the latter may be more of a threat now. His program for ending Japan's decade-long stagnation is to promote a mild degree of inflation as the most practical way to start resurgence in demand.

Professor Krugman sees both the domestically generated problems in Japan, and the trade and currency crises in the emerging economies of Asia and Latin America, as the creations of the self-perpetuating crises of confidence. His book provides discussions of possible actions he feels governments and central banks might take to prevent such crises from turning into destructive downward economic spirals.

This is a well-written and worthwhile book. I recommend it. ■

Actuarial Science Position Available at Laval

A tenure-track faculty position is to be filled starting November 1, 2002. Teaching at Laval University is conducted in French. The position is open to both doctoral students and professionals with significant experience. Laval University intends to hire women for half its vacant positions. Priority will be given to Canadian citizens and permanent residents. Check for more details at www.act.ulaval.ca. Submit a CV and three letters of reference to Chair, École d'actuariat, Pavillon Vachon, Université Laval, Ste-Foy (Québec), Canada G1K 7P4 before August 31, 2002. Outline teaching or communication experience. Teaching, research interests, and P/C insurance experience are assets. ■



Uncommon Assumptions

Editor's Note: This article is part of a series written by members of the CAS Committee on Professionalism Education (COPE) and the Actuarial Board of Counseling and Discipline (ABCD). The opinions expressed by readers and authors are for discussion purposes only and should not be used to prejudge the disposition of any actual case or modify published professional standards as they may apply in real-life situations.

You are an ACAS and work for ABC insurance company in the ratemaking department. ABC is the largest writer of homeowners insurance in the state. Your boss, Mr. Slick, FCAS, asks you to put together a homeowners rate filing that he intends to sign. Your analysis results in an indicated rate decrease of 5 percent. Mr. Slick reviews your work and tells you that management has decided to file for a 15 percent increase. He asks you to change some assumptions to produce the desired 15 percent rate increase indication. You believe these changes are somewhat arbitrary and result in an unreasonable rate indication.

Later that afternoon, you get a chance to express your concerns to Mr. Slick. He tells you not to worry about it because he is the only one signing the rate filing and he believes that the proposed rates are reasonable. In addition, he tells you that the 15 percent rate increase will put your company's rates on a level that is comparable to the industry. Should you go ahead and

make the requested changes to your rate level indication even though you believe that the result is unreasonable?

Yes

According to Actuarial Standard of Practice Number 41, Actuarial Communications, "The actuary issuing an actuarial communication should ensure that the actuarial communication clearly identifies the actuary as being responsible for it whenever that responsibility is not already apparent." Your boss is the only one signing the rate filing, and therefore, assumes all responsibility for its contents.

Also, you already attempted to resolve the situation with your boss as required by Precept 13 of the Code of Professional Conduct and your boss provided reasons why he believes that the adjustments were reasonable. You should not refuse to do the work just because of a difference in opinion. Besides, the rate filing should be reasonable if it results in rates that are comparable with the industry.

Precept 13—An Actuary with knowledge of an apparent, unresolved, material violation of the Code by another Actuary should consider discussing the situation with the other Actuary and attempt to resolve the apparent violation. If such discussion is not attempted or is not successful, the Actuary shall disclose such violation to the appropriate counseling and discipline body of the profession, except where the disclosure would be contrary to Law or divulge Confidential Information.

No

It would be unprofessional to perform work that you believe is unreasonable simply because you are not signing the rate filing. You have a responsibility under Precept 1 of the Code of Professional Conduct to "...act honestly, with integrity and competence, and in a manner to fulfill the profession's responsibility to the public and to uphold the reputation of the actuarial profession." If you do not believe the adjustments requested by your boss are reasonable, then you must refuse to do the work or find an alternative solution that is acceptable. Furthermore, if an alternative solution is not acceptable and a revised filing is submitted by Mr. Slick, you have an obligation under Precept 13 to "disclose such violations to the appropriate counseling and discipline body of the profession," as noted before.

Finally, producing a rate filing that results in rates comparable to the industry is not proper justification for modifying your analysis in order to arrive at a predetermined conclusion. Appropriate reasons may exist for why the industry's rates are currently higher than your company, but you should identify the reasons for the difference before you make adjustments to your analysis. Otherwise, you would be in violation of Annotation 1-1 of the Code of Professional Conduct, which states: "An Actuary shall perform Actuarial Service with skill and care." ■

25 Years Ago in *The Actuarial Review*

The following is an excerpt from Norman J. Bennett's "Maunderings" column from 25 years ago. We have two questions for our current readers: Do you agree with Norm's conclusion? Is there a humorist among you who would volunteer to follow in Norm's footsteps?

American business is increasingly concerned with [the obsolescence of professionals]. Current estimates are that five years out of college an engineer may be obsolete. A recent study suggested that 20 percent of a professional's working day ought to be spent keeping up to date.

Considering our own field, I conjectured about a rather harsh test. I imagined a man fully qualified in the actuarial profession

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New Fellows and Associates Honored at the 2002 CAS Spring Meeting

New Fellows, first row, from left: Michael R. Zarembler, Feifei Ford, Borwen Lee, David C. Brueckman, **CAS President Robert F. Conger**, Wendy Rebecca Speert, Patricia A. Hladun, Ajay Pahwa, Dawn Marie S. Happ. **Second row, from left:** James C. Sandor, Marc S. Hall, Wade Thomas Warriner, Ellen A. Berning, Hugo Corbeil, Edward Kofi Gyampo. **Third row, from left:** Richard Paul Lonardo, Peter H. Latshaw, David Michael Maurer, Vadim Y. Mezhebovsky, Kraig Paul Peterson.



New Associates, first row, from left: Ellen D. Fitzsimmons, Bethany R. Webb, Serhat Guven, **CAS President Robert F. Conger**, Benjamin G. Rosenblum, Claude B. Bunick, Andrew W. Bernstein, Sharon L. Fochi. **Second row, from left:** Andrea L. Phillips, John L. Baldan, Robert B. Penwick, Ryan A. Michel, Kevin M. Finn, Matthew P. Nimchek, Elizabeth A. Kurina, Elaine K. Brunner. **Third row, from left:** Jeff A. Kluck, James D. Heidt, Teresa Marie Scharn, Lester Pun, Carolyn D. Wettstein, Jennifer E. Kish. **Fourth row, from left:** Brian S. Donovan, William R. McClintock, Lawrence J. McTaggart III, Jonathan D. Levy, Matthew D. Trone,

Matthew R. Gorrell, William D. Van Dyke, Lowell D. Olson, Gregory A. Frankowiak, Rhonda R. Hellman.

New Associates not pictured: Thomas D. Isensee, Jesse T. Jacobs, Kenneth Lin, James L. Norris, Bruce G. Pendergast, Brian A. Viscusi, Yingjie Zhang.

25 Years Ago

From page 10

who retired and left the field in 1935. I arranged to have him reincarnated next month with his 42 year-old training intact, with his mind as sharp as that of a new young Fellow, and then I wondered about the time necessary to make him a fully functioning 1977 actuary.

Interestingly enough, I am told that if I had chosen a chemist instead of an actuary for this test, there would be no doubt of the outcome. His obsolescence would be close to 100 % and the retraining period would be the same as the training period for a 1977 apprentice....

My conclusions in applying the test of obsolescence are depressing. The bright reincarnate from the depression years could use a couple of weeks at

Poughkeepsie, two or three sessions as an observer of ISO Actuarial Committees, lunch with an accountant and one or two regulators, and he would soon fit smoothly back into the profession. In six months, save for his rather old-fashioned looking suits, he would scarcely be distinguishable from Harvey Tackaberry.

When I glance over at my neat set of the *Proceedings*, I am appalled at...my conclusion. There is no way that our embodiment of the past could master in such a short period the negative binomial, Bayesian credibility, nonlinear retrospective rating, and the dozens of esoteric projects that have engaged the attention of successive waves of bright young actuaries through the years and technically become part of our heritage.

I might be even more appalled if I were to discover that he needn't bother doing so. Suppose, for example, I were to hand him a copy of the Stanford Research Institute's report on classification....Following one or two questions on definitions, I suspect he would announce that even with his antique knowledge he understood it thoroughly—whether he agreed with it or not.

He would have uncovered, it appears, our dual personalities as actuaries: the first covets academic robes, erudition, and colloquies; the second pays obeisance to a pragmatic world that rarely lets the first out of its blue buckram volumes. He would find, in other words, that if he wanted to read about the negative binomial for pleasure he was welcome to. If he didn't, the actuarial world wouldn't notice. ■

Did the Cost of Risk Change on 9/11?

by Oakley E. "Lee" Van Slyke

Twelve actuaries met at the Special Interest Seminar, "The Changing Insurance Market," in Dallas, on April 16, 2002, to discuss the question, "Did the Cost of Risk Change on 9/11?" I served as facilitator of the group.

Some participants noted that the "cost of risk" did increase on 9/11. As **Barry Franklin**, of Aon, put it, "Risk transfer is more expensive today." **Shaun Wang**, in a paper presented at AFIR, has shown that the cost of reinsurance has increased even for earthquake cover, for which the probabilities of loss had not changed.

There was a great deal of discussion about the meaning of the question. To my personal surprise, there was a consensus that the question should be worded, "Did the *cost of uncertainty* change on 9/11?"

The group noted that the markets changed over time following the events of 9/11. Referring to a hardening market, Franklin said, "9/11 amplified a lot of things that were going on anyway." In many cases, he noted, "Prices skyrocketed." In some markets, the cost of risk changed on 9/11, but then changed back. Specifically, the group observed that although the property catastrophe market is still tight, the broad capital markets recovered within a month or so.

Bruce Bradley, FSA, of UICI, a health insurer, reported that UICI's stock price had gone down, then recovered and risen to new highs after 9/11. Apparently the capital markets initially punished all stocks, then backed off to punishing all insurance stocks, then finally settled on those parts of the insurance industry that really were affected by the events, as hindsight informed us about those events. This process is still going on, according to the discussion that followed.

Greg Cote, of The Travelers, pointed out that changes in probabilities have arisen in two ways. Certainly, the events of 9/11 changed the *explicit* probability that certain events will happen in the future. In addition, the *subjective* probability that the underwriters and actuaries consider in their world

outlook had also increased. As someone had stated at an earlier session in the day, "what before had been unthinkable was now the subject of serious thought."

After a lengthy exchange, the group reached a consensus regarding how to use the terms "risk" and "uncertainty," a conclusion that may surprise most actuaries as much as it did me. Although for more than a century actuaries have used the term "risk" to denote uncertainty, the group agreed that this made for poor communication. Underwriters, risk managers, and regulators all use the term "risk" to mean insurance obligations, not just their uncertainty. The group recommended that casualty actuaries refer to the cost of the capital that supports underwriting and investment outcomes that are uncertain as "the cost of uncertainty."

The attendees then turned their attention to the question, "Did the *cost of uncertainty* change on 9/11?"

It was easy to agree that premiums increased by more than the increase in the expected value of loss payments. "I can think of no large corporate risks where the per unit 'cost of uncertainty' has not increased," stated Mark Ames of MMC Enterprise Risk Management.

The market's charge for any given amount of uncertainty has changed within a specific market (such as property reinsurance) as a response to events. The market's charge per unit of uncertainty changes across markets indirectly, and perhaps 9/11 was not a very large dollar event in the context of the larger capital markets.

As it was for the cost of risk transfer, timing was a key factor in the changing cost of uncertainty.

Stephen Philbrick of Conning Asset Management observed that stock price data suggested that the cost of uncertainty, as reflected in the broad capital markets, has not increased much. "Our stock markets performed well compared to what might have happened," he said.

All agreed that the capital market rewards consistent earnings growth. As a result, risk transfer can add value to

both transferor and transferee. One person commented that there are risks for which the cost of transferring the uncertainty is many times the expected value of the losses.

Gary Venter of Guy Carpenter Instrat wrote in his article "Allocating Surplus—Not!" (*The Actuarial Review*, February 2002): "A given line of business could look extremely profitable or a waste of effort, depending on the method chosen [to evaluate the cost of uncertainty]." Ames made a similar point, stating that there is no consensus in the investment community on a theory of risk transfer that encompasses all types of risks, and there is no one financial theory to make all types of financial decisions.

The group generally felt that it is reasonable to analyze the "cost of uncertainty" into the product of "an amount of uncertainty" times "a market price per unit of uncertainty." There was a diversity of opinion, however, about the meaning of a "per unit cost of uncertainty." Also, the group was divided on whether the economic concept of equilibrium of supply and demand could be used to determine the "per unit cost of uncertainty."

Other participants in our group discussion were **Walt Jedziniak** of The Travelers, **Bob Wolf** of MMC Enterprise Risk Management, **Alan Kaliski**, of Royal Sun Alliance, **Dave Powell** of Tillinghast, **Bob Conger** of Tillinghast, and **Al Commodore** of Deep South Surplus, Inc.

On the plane to Dallas, I clipped the following quote of Jacques-Lucien Monod from *Discover* magazine: "Personal self-satisfaction is the death of the scientist. Collective self-satisfaction is the death of research. It is restlessness, anxiety, dissatisfaction, [and] agony of the mind that nourish science." If this article has surprised you as much as moderating the discussion surprised me, or if it has stimulated you to search for answers as to the question of how to price the risk of uncertainty, then it has served its purpose. ■

Setting Capital Requirements With Coherent Measures of Risk—Part 1

by Glenn G. Meyers

Insurers need capital to pay claims when premium revenues fall short. We actuaries have long sought a formula that determines this capital directly from the insurer's aggregate loss distribution. As Bob Butsic¹ pointed out at our recent spring meeting, the derivation of such a formula is not an obvious process. We have to balance the cost of an insolvency with the cost of holding capital. Should we find such a formula, we could use it to quantify the effects of the cost of capital on a variety of pricing and reinsurance strategies.

The paper "Coherent Measures of Risk" by Artzner, et al.² provides an axiomatic treatment of this problem. The CAS Committee on Dynamic Financial Analysis plans to add a chapter on this subject into the *DFA Handbook*. This is the first of two articles that summarize the main ideas in that paper.

Let X be a random variable representing an insurer's total loss. Let $\rho(X)$ be a measure of risk that represents the assets that the insurer should have on hand to pay all losses for which it is liable. The insurer may account for a portion of its assets as a liability to cover what it expects to pay, but in some instances more money will be needed. The money set aside for this contingency is what we call capital. Let's now review some properties we want $\rho(X)$ to have. Consider the following set of scenarios and the risk measure $\rho(X) = \text{Maximum}(X)$ applied to the five loss scenarios.

Table 1

Scenario	X_1	X_2	X_1+X_2	$2xX_1$	X_1+1
1	1	5	6	2	2
2	2	1	3	4	3
3	4	2	6	8	5
4	5	4	9	10	6
5	3	3	6	6	4
$\rho(X)$	5	5	9	10	6

Artzner, et al., begin by stating a set of axioms that define "coherent measures of risk":

1. Subadditivity—For all random losses X and Y ,

$$\rho(X + Y) \leq \rho(X) + \rho(Y)$$

2. Monotonicity—For all random losses X and Y , if $X \leq Y$ for all scenarios, then

$$\rho(X) \leq \rho(Y)$$

3. Positive Homogeneity—For all $\lambda \geq 0$ and random losses X ,

$$\rho(\lambda X) = \lambda \rho(X)$$

4. Translation Invariance—For all random losses X and constant loss amounts α ,

$$\rho(X + \alpha) = \rho(X) + \alpha$$

You can see by inspection that the measure $\rho(X) = \text{Maximum}(X)$ satisfies these axioms, and thus is a coherent measure of risk.

Let's discuss the meaning of these axioms. The subadditivity axiom captures the meaning of diversification. When two insurers merge, they do not need to increase their total assets. In fact, if the merger is effective, they can reduce their total assets. The monotonicity axiom means that if Insurer A always has losses that are less than Insurer B, it will need less total assets. The positive homogeneity axiom means that if an insurer buys a λ percent quota share reinsurance contract on its entire book of business, it can reduce its assets by λ percent.

An advantage to having a good axiomatic system to measure risk is that it frees us from any worry of making inconsistent decisions on managing risk.

Now if we use $\rho(X) = \text{Maximum}(X)$ for most real insurance situations, we would find ourselves paying dearly for maintaining the necessary capital.

Artzner, et al., provide us with a less conservative coherent measure of risk, called the Tail Value at Risk. This is calculated by the formula:

$TVaR_\alpha(X)$ = Average of the Top $(1-\alpha)\%$ of Losses

Table 2 gives $TVaR_\alpha(X)$ for $\alpha = 40\%$ and 60% with the scenarios of Table 1.

Table 2

	X_1	X_2	X_1+X_2	$2xX_1$	X_1+1
$TVaR_{40\%}$	4.0	4.0	7.0	8.0	5.0
$TVaR_{60\%}$	4.5	4.5	7.5	9.0	5.5

Now there are other measures of risk that we actuaries often use that are not coherent. One of these measures is the probability of ruin, a.k.a. the Value at Risk (VaR). Consider, for example, two insurers with the following loss scenarios.

Table 3

Scenario	Probability	Insurer A	Insurer B	Insurers A and B
1	0.9850	0	0	0
2	0.0075	100	0	100
3	0.0075	0	100	100

Let's suppose that we measure risk by setting $\rho(X)$ equal to the 99th percentile of loss. For Insurers A and B, $\rho(X_A) + \rho(X_B) = 0$, but $\rho(X_A + X_B) = 100$. This violates the subadditivity axiom, and shows that VaR is not a coherent measure of risk.

A second measure that is commonly used but is not coherent is given by setting $\rho(X)$ equal to the expected value of X plus a constant, T , times the standard deviation of X .

Consider two insurers with the following loss scenarios.

Table 4

Scenario	Probability	Insurer A	Insurer B
1	0.5	0	65
2	0.5	100	115

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Combating a Crippling Disease

by Marty Adler

Heretofore my columns have focused on interesting avocations of our fellow professionals, but you can also get enormous satisfaction and a sense of accomplishment by using your free time in working for a charity. Sometimes the incentive comes when a debilitating disease strikes a family member. **Peter Licht** was impelled to such activity when his son, Daniel, was afflicted with Fibrodysplasia Ossificans Progressiva (FOP). FOP is a rare genetic disorder. Bone forms in muscles, tendons, ligaments, and other connective tissues. Extra bone develops across joints, progressively restricting movement. Overall, the body not only produces too much bone, but an extra skeleton that immobilizes the joints of the body.

Except for congenital malformations of the great toe, children with FOP appear normal at birth. But soon, they form painful fibrous nodules over the neck, back, and shoulders, which then develop into bone. After progressing along the trunk and limbs, these lesions slowly replace the body's muscles with normal appearing bone. Any attempt to remove the extra bone produces even more robust bone formation because trauma accelerates the disease process. People who have FOP experience different and unpredictable rates of new bone formation. It appears, however, that the progression has a characteristic pattern, with impact on the back and shoulder areas almost always preceding the development of FOP in lower areas, such as the hips and knees. Most adults are wheelchair-bound by their 30's.

Daniel showed symptoms since age one but was misdiagnosed. As a result he underwent unnecessary surgery and chemotherapy. Eventually a pediatric oncologist at the Sloan-Kettering Institute told Peter and his wife, Jeri, that Daniel did not have what they had thought. She directed them to the Uni-

versity of Pennsylvania Hospital where Daniel was diagnosed with FOP. That was five years ago on Daniel's third birthday. On that fateful day they also met another family with a child with FOP. The families would become a great comfort and support to each other.

The FOP diagnosis changed life for Peter and Jeri, who abandoned her ca-

“FOP has been called a ‘terrorist disease.’ One does not know when it will strike and whether a flare-up will be temporary or cause permanent loss of movement of a limb.”

reer as a personal injury attorney to dedicate herself to Daniel's special needs and daily happiness. Peter immediately devoted his time to looking for information about FOP on the Web and discovered the International FOP Association (IFOPA), a support organization of families affected by FOP.

IFOPA supports education, communication and a search for a cure. There are fewer than 300 members from 26 countries with FOP, and fewer than 200 in the U.S. However, with an incidence of one in two million, it is estimated that about 2,500 people worldwide actually have the condition. Once the shock of the diagnosis wore off a little, Peter and Jeri started a letter-writing campaign, letting their families know about the diagnosis and asking for funds for research. Peter then expanded this to their friends, to business associates, and ultimately to their entire community.

Jeri then began volunteering her time to the IFOPA, which as a charitable nonprofit, depends on volunteers. Initially, she chaired the Membership

Committee, where she contacted newly diagnosed families, fielded many questions on member problems, directed people to sources of information, and more. She has now joined the Fund-Raising Committee.

After first becoming active on the IFOPA Finance Committee making recommendations to the board of directors, Peter became treasurer in January 2001. It requires about two hours each week, plus 10 more at the end of each quarter, including a report to the board of directors, and 20 hours at year-end. The IFOPA must make conservative investments, as it needs a steady cash flow. It has about a six-month planning horizon because the funds are not guaranteed. Almost all funds come from family fund-raising. In addition to the IFOPA grants for research, the FOP Laboratory at the University of Pennsylvania, where most FOP research is done, receives support from the National Institutes of Health and the University of Pennsylvania. The scientists in the lab are dedicated to finding a genetic switch that will turn off the bone-making gene. This research can benefit more than just those with FOP by providing insights into such prevalent bone-related disorders as osteoporosis, arthritis, certain heart valve disorders, and some spinal cord injuries. For that reason, in November 2000, there was a research symposium on FOP in Philadelphia attended by scientists from around the world.

In addition to working for the IFOPA, Peter stays in contact with its members. Since FOP is such a rare disease, there are few parents to contact for helpful advice on handling various aspects of living with it. The IFOPA has an Internet mail group, which enables members to tell one another how they handled difficult situations. Normal health problems may have threatening implications for those afflicted with FOP. For instance, if the bones of the

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Task Force Announces Job Skills Survey

The Future Education Task Force is studying the current educational system and possible areas for improvement. All CAS members are urged to participate in a Survey on CAS Professional Skills. The survey is available on the CAS Web Site in the "Member Services" section.

Q: What is the purpose of the survey?

A: To solicit ideas on how to improve actuaries' education and professional skills. The survey will be used to improve education for our students and continuing education for our members. The two key questions of the survey are:

1. What skills or areas of knowledge are important to you as a practicing actuary?
2. How should these skills or areas of knowledge be acquired? Should they be acquired through the CAS *Syllabus of Examinations*, through continuing education, or through other educational opportunities?

Q: How will the information from the survey be used?

A: The Future Education Task Force will compile the results and publish a report with its findings. Individual responses to the survey will be kept confidential. The task force will keep track of respondents' professional attributes to ensure a broad sample of actuarial backgrounds. The report will recommend improvements to our current educational process.

Q: How will the survey be administered?

A: The survey is available on the CAS Web Site and can be submitted electronically. All CAS members are welcome to respond.

The task force specifically encourages actuaries from as many diverse areas as possible to respond. This includes actuaries involved in pricing, reserving, reinsurance, finance, and nontraditional areas, among many possibilities. The more diverse our respondents, the more comfortable we can be that the answers represent the best interests of the CAS. Each completed survey will have an important impact on the future of the CAS educational process.

Q: How long will it take to complete the survey?

A: It is estimated that completing the survey will take about 45 minutes.

Q: How can I win \$100?

A: Everyone who completes and submits a survey will be entered in a drawing for a \$100 prize!

Q: What should I do now?

A: Please complete the survey right away! Your answers will affect the education of the next generation of actuaries, as well as help the CAS plan continuing education opportunities for members.

Q: How can I join the Future Education Task Force?

A: Any CAS members or students who wish to join the Future Education Task Force are welcome to do so by contacting Tom Downey at the CAS.

The Future Education Task Force looks forward to receiving your completed survey, which is available on the Web site until September 3. ■

Latest Research

From page 13

If we set $T = 2$, we have $\rho(X_A) = 150$ and $\rho(X_B) = 140$. But since $X_A \leq X_B$ for every scenario, this measure violates the monotonicity axiom and is not a coherent measure of risk.

So far, I have identified only

$Maximum(X)$ and $TVaR(X)$ as coherent measures of risk. These measures are sensitive mainly to extreme events. You may want a coherent measure of risk that responds to the full range of losses. There are such measures. It turns out that there is a good way to describe all coherent measures of risk, and I will discuss this in the next article.

Nonactuarial Pursuits

From page 14

rib cage are affected, the lungs cannot expand. This can make an ordinary upper respiratory infection very serious. When his son required orthodontia, Peter and Jeri knew that great care was needed because of the risk of unintentionally accelerating bone formation in the mouth. They found an orthodontist in New Jersey who had worked on an-

other IFOPA members' child, then reached a member in Australia whose son had had a similar procedure, and connected the two specialists by e-mail to develop a plan of treatment for Daniel.

FOP has been called a "terrorist disease." One does not know when it will strike and whether a flare-up will be temporary or cause permanent loss of movement of a limb. Peter finds that his son's affliction has put his job stress in

perspective. He and Jeri remain upbeat and optimistic. They believe that the funds that they and others are raising to support the research at Penn will lead to alleviation of the effects of the disease and perhaps some day find a cure.

Editor's Note: For more information about FOP or the IFOPA, or to make a donation, please visit www.IFOPA.org or write to International FOP Association, PO Box 196217, Winter Spring, Florida 32719-6217. ■

¹ Robert Butsic, "Allocating the Cost of Capital," CAS Spring Meeting, May 19-22, 2002. www.casact.org/coneduc/spring/2002/handouts/butsic1.ppt

² Philippe Artzner, Freddy Delbaen, Jean-Marc Eber and David Heath, "Coherent Measures of Risk," Math. Finance 9 (1999), no. 3, 203-228 www.math.ethz.ch/~delbaen/ftp/preprints/CoherentMF.pdf ■

Tales From the Chiefs: What it's Really Like to be CAS President

by Elizabeth Smith

With the increased interest in the CAS election process and recent changes in the election rules and procedures, *The Actuarial Review* staff thought it would be helpful to members to learn just what it's like to be a CAS president. Four past presidents and one current president responded to a series of questions on their terms as president. Our respondents include: **Stan Khury** (1984-85), **Irene Bass** (1993-94), **Bob Anker** (1996-97), **Alice Gannon** (1999-2000), and **Bob Conger**.

Smith: *What did you expect the role of the president to be?*

Bass: I expected the president to be an active participant of the board, and to be one of the representatives of the CAS to other organizations. In the end, I expected it to be more of a job than an office. It was.

Khury: I had a really good understanding of what I needed to do in that spot—as it fell to me to initiate a lot of procedures and organization to complete the transition. On a higher level,

I don't think the role of the president is something that exists in the abstract. I think it is what the situation calls for. The times and circumstances define the role. As it is, power is

“...the president's job is most like a COO, responsible for the successful execution of the agreed strategy and goals.”
—Bob Conger



so widely distributed around the CAS that the president just has the loudest megaphone for a twelve-month period, so that he or she could influence outcomes during his or her tenure but only to the extent that the times and circumstances call for such leadership. I saw the job, at a very generic level, as one of

stewardship over the care of the institution in order to maintain and improve its capacity to serve its main constituency: the members.

Gannon: The nature of the work was pretty much what I had expected. I knew the office was primarily one of administration and indeed that is the majority of the work involved. There was a somewhat greater role of representing the CAS to non-CAS audiences than I had expected, although that was still a fairly minor role compared to the administrative one.

Anker: I expected to serve as a combination of COO for the volunteer organization and CEO for the overall organization. That turned out to be a reasonably good assessment, made much easier by the excellent office staff, a great Executive Council, and volunteers who contributed work and ideas in equal measure.

Conger: I had a pretty realistic expectation of the nature of the position, having been involved in a wide variety

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Challenges and Sacrifices

by Elizabeth Smith



Fred Kilbourne

The opportunity to work with other actuaries professionally and to see the CAS prosper were just two of the many positive aspects of being CAS president for **Fred Kilbourne**, CAS president in 1982-83. Politics, on the other hand, was one of the least enjoyable aspects of his tenure. Besides having the extra challenge of serving as president while starting a small consulting operation, Kilbourne was witness to some fascinating political circumstances.

One highly charged situation involved a heated discussion over the appropriateness of Las Vegas as a meeting site—a discussion that reached the board level. Some felt that Las Vegas was the wrong image for the CAS—one Fellow even rescinded his membership over the matter. In the end the meeting venue was changed to Toronto. The Fellow did not rejoin the CAS and Las Vegas has since become a popular meeting site amongst CAS members.

Under Kilbourne's tenure the CAS hit its 1,000th member mark. At the time, the idea of having a CAS pledge of allegiance was being promoted. Thinking the idea of a pledge absurd, Kilbourne felt that what was truly needed was a ceremony. So in a Swiftian measure he proposed the ritual sacrifice of each 1,000th member. The pledge and sacrifice ideas went down to defeat together.

As for his advice to those running for office, Kilbourne feels that competition is healthy. He stresses that it is important to keep one's sense of humor and not to become impressed with the position. One of Kilbourne's goals during his presidency was progress toward consolidating the different actuarial organizations—an idea that is still intensely debated within the Society. ■

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of CAS roles, including the board and executive council (EC) previously. The job is focused on shepherding the forward progress of the CAS mission and goals, as guided by the board of directors. The board (not the president) is responsible for establishing the overall direction, strategy, and policies of the CAS. In many ways, the president's job is most like a COO,

“The CAS is best served by the president-elect and president having no agenda other than to do their very best to implement and administer the policies established by the board.”

—Alice Gannon



responsible for the successful execution of the agreed strategy and goals. One aspect of the job that has grown in recent years is the “ambassadorial” component, both to groups within the CAS (Regional Affiliates) and outside (actuarial organizations in other countries and other insurance associations). The CAS relies on an extraordinary amount of work by its volunteers, and an excellent office staff. Virtually everything the president does involves extensive input from and collaboration with other people. The willingness and ability to reach consensus are central to the job.

Smith: *Was being president mainly a “figurehead” role, or did it give you an opportunity to make changes?*

Gannon: It is definitely not a “figurehead” role. On the other hand it is NOT an opportunity to make policy changes or at least it doesn't give you any greater opportunity to make policy changes than any CAS member who is willing to put in the time and effort necessary to know the issue and “lobby” the board for the desired

change. The president's primary responsibility is to work with the other EC members, committee members, and staff to implement board policy. The president is in a strong position to find and fix inefficiencies in operations or to uncover things that just aren't working the way the board intended them to work, but the president does not have authority to make any policy changes. The one-year term the president serves also limits the amount of change any one president can make, even with regard to administrative items.

Khury: It was hardly a figurehead role, as the whole institution was looking ahead to some definite organizational form and had the opportunity and I was at the right spot to effect it.

Anker: I did not find it to be a figurehead role at all. There are, of course, some figurehead activities that come with any top executive position but they were all within the bounds of expectations. There was a great deal of problem solving and many emerging issues on which new ground needed to be plowed or change needed to be accomplished. The president has the most influential voice in all change but certainly not the only voice. The ultimate responsibility, once you have assured the board has the best information and advice you can give, is to respond effectively to board policy and direction.

Bass: I don't think the CAS presidency is a figurehead. On the other hand, it is not a dictatorship either! I think that the president of the CAS is simply “the first among equals.” After all, the president gets the same number of votes (one) as every other member of the board of directors, and the president is just another member of the CAS. Those who have not served on the board may tend to think that the president has more power stemming out of the office than he or she actually has—whether that perceived power is to make things happen in the CAS or to make things happen with respect to other organizations that interface with the CAS. All power in this type of situation flows not from the office, but from the individual's ability to lead the way, whether that person has the title “president” or not. What the president has is the ability to get the ear of other

CAS and non-CAS leaders simply because of his or her position. However, if the president has nothing useful, thoughtful, or valuable to say, the ear will quickly become deaf—president or not.

Conger: I characterize the president as having, first and foremost, a stewardship role. CAS members have created a very special organization that provides some excellent and very important services. They have collectively created a strong, positive culture of volunteerism and involvement. The overall responsibility of the president is to oversee the deployment of resources to keep these services and this culture on track. I think it is a very positive aspect of our structure and tradition that each president does not come into office with a new



“Expect surprises! No matter what you expect, no matter what you are prepared for, something else will happen.”

—Bob Anker

agenda that takes the organization in a different direction. The president has no dictatorial powers. On the other hand, each member of the leadership team has the opportunity and responsibility to observe if there is a need to change the deployment of resources in order to accomplish the organization's stated goals, and to work with other members of the leadership team to accomplish the necessary change. The president has the same kinds of opportunities and responsibilities in this regard as the rest of the leadership team, only to a greater degree. (I define the leadership team to include the executive director, committee chairs, vice presidents, president elect and president, and board of directors.)

Smith: *Did you come into the office with an agenda?*

Anker: Because I did not consider

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How Times Have Changed

by Elizabeth Smith



Ruth Salzmann

If you ask **Ruth Salzmann**, CAS president from 1978-79, the life of a CAS president has improved greatly in the more than 20 years since her presidency. Salzmann has seen the CAS undergo numerous changes, among them a nearly tripled membership and the establishment of a national office. "Things have improved and I think it's wonderful!" says Salzmann.

Before there was a CAS Office, dedicated CAS members volunteered to run the Society. Salzmann knew that the presidency would entail a lot of work but didn't realize all with which the president was involved. According to Salzmann, being president was a highly administrative post with very little time devoted to promoting an agenda or being a leader—there definitely was not enough time to be a figurehead. "I was too busy keeping things going," she laughs. The bulk of the work was done by the three executive officers: the president, immediate past president, and the president-elect. These officers, who usually met monthly, were responsible for all the meetings, including several board meetings throughout the year, and the Annual and Spring Meetings. Salzmann says that the board and executive officers looked to the CAS Long Range Planning Committee for leadership and plans for progress.

While she thoroughly enjoyed her time as president, she wishes she could have done more. "Being president was a great honor," says Salzmann. "I believe everyone who has been chosen respects and appreciates the office."■

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the position a figurehead role, I had an agenda. I wanted to continue the effective execution of the unfinished agenda items of those whom I had the good fortune to follow; significantly raise awareness of the international environment; resolve the education issues that arose from exam partitioning; and involve the president-elect more in the presidential role so as to smooth the transition, make it easier to complete tasks during the presidential year, and make life easier in general. I believe I accomplished all the objectives although I won't claim successful results on all.

Gannon: I had an agenda when I was elected to the board of directors, two years before I was elected to the position of president-elect, and I think that was appropriate. I was intentional about NOT having an agenda as president. I think that having an agenda would have only interfered with me doing the job of president-elect and president. The CAS is best served by the president-elect and president having no agenda other than to do their very best to implement and administer the policies established by the board. The primary influence that a good president has on CAS policy is to assure that the board considers all aspects

of implementing various policy options, including the practical ones. The president and other EC members are usually more knowledgeable than the other board members about a lot of practical constraints since they are working with the practical aspect of implementation on a regular basis.

"If you are seeking to be president, examine very thoughtfully and honestly the reason for your doing so."

—Irene Bass



Smith: What were the toughest aspects of the job?

Khury: The only wish I have is that we [could have had] the office infrastructure that we have now. That made the job very difficult for me, as everything had to be done by my assistant and me. The office was not able to do but a small fraction of what is done today to support the president and the institution.

Conger: Not having enough hours in the day to accomplish everything that I would like to and constant e-mail.

Effecting change in a volunteer organization is a difficult but rewarding exercise in collaboration, cooperation, and persuasion.

Bass: The most difficult aspects of the job for me personally were attending all of the COP (Council of Presidents) meetings and the international actuarial meetings. These meetings did not seem to accomplish much of value for the CAS, and the travel to get to them was time-consuming and exceedingly expensive to the CAS.

Gannon: The time commitment and travel requirements are pretty demanding. Probably the hardest responsibility to fulfill is the challenge of explaining the CAS perspective on various matters to non-CAS groups such as the SOA leadership, the academic community, and actuaries in other countries who do not have separate organizations for casualty actuaries. Communication issues are always tough!

Smith: What aspects of being president were most enjoyable? Least enjoyable?

Khury: It was most enjoyable to see the very first halting steps into a new organizational form that was only an idea just a short time before. Least enjoyable? Some of the obligatory meetings that simply required the president's presence, while interesting,

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returned very little on the time invested in them. Perhaps an examination is in order to see if most of the ambassadorial functions of the president and president-elect could be divided among the vice presidents or other positions.

Conger: I enjoy working with other volunteers at all levels of the organization and our excellent staff. Also, I have found it very satisfying to see (and participate in) marked progress with the CAS visibility internationally, and to meet other actuaries from around the world. The least enjoyable aspect is feeling less than totally successful at balancing CAS responsibilities, other job responsibilities, and family life.

Anker: The most enjoyable was simply the incredible honor to be president of the Casualty Actuarial Society. It was a real rush.

Bass: Some of the most enjoyable aspects were writing the president's column in *The Actuarial Review* and giving short speeches to the membership.

Gannon: The most enjoyable aspect of serving as president is the opportunity to get to know and work with so many fascinating people. Actuaries are really great people! The least enjoyable aspect for me was the traveling. I can't sleep at all on airplanes and I don't sleep well in hotels, so I was pretty sleep deprived by the end of my year.

Smith: *What advice would you give to someone seeking the office?*

Khury: Test your motives. Know exactly why you are seeking to be of service in this particular manner. Anything less than 100 percent dedication to a successful stewardship in service to the members must be examined very carefully. The CAS exists to serve its

members and all efforts need to be aimed in that direction.

Anker: Expect surprises! No matter what you expect, no matter what you are prepared for, something else will happen. It may be in your personal life, your business life, your professional life or the CAS, but you will encounter something totally unan-



"...our president is simply the first among equals. Not more, not less."

—Stan Khury

anticipated. The probability is 99.93 percent at a ludicrously high confidence.

Bass: I think that no one (especially including elected politicians in the U.S.) should hold office who seeks it. This is Thomas More's position as presented in his work *Utopia*. If you are seeking to be president, examine very thoughtfully and honestly the reason for your doing so. The honest answer will have relevance for you personally and for the CAS.

Gannon: Serving as CAS president is a labor of love. If your motivation for seeking the office is to have this significant "servant leadership" opportunity within the casualty actuarial profession, then go for it. If your motivation is anything else, then I think you will be disappointed.

Conger: Park your ego. Your job is to further the agenda of the CAS through collaborative efforts, not to install your own agenda. Make good use of the president-elect year to observe how the processes works and to

identify elements of the CAS strategy and plan that will need the most attention from the EC during your year as president. Keep the list short. Nurture our volunteer processes and other aspects of our culture that cause our members to feel that they are part of the organization. Be prepared for a very busy, but exhilarating year.

Smith: *Any other comments on being president?*

Gannon: I don't think we should confuse the office of president of the CAS with federal- or state-elected offices, or think the election process should be similar. The CAS has a very limited and well-defined purpose compared to federal and state governments. The price society pays for "competitive elections" of its highest government officials is a price justified by the wide range of issues and type of issues that elected public officials must address and by the huge diversity of the citizenry. That is not the case with regard to the CAS. Let us not make the price of serving as president of the CAS even higher than it already is or we may find few willing to serve in the role who can and will do the job that is needed.

Khury: Service as president is just one of many hundreds of ways one can serve the CAS. I believe that one becomes president as a natural by-product of a long tenure at the wheel, serving the CAS in various capacities. A job well done begets other service opportunities of greater leverage. The end of that line is marked by serving as president—a receipt for a long journey of service. Sometimes I wish we would change the title of president to that of convener. That would clearly delineate the idea that our president is simply the first among equals. Not more, not less. ■

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Schwartz: *Are there any technical or business skills that the current CAS syllabus either does not cover or does not cover adequately? Are there any technical or business skills that the current CAS syllabus covers more thoroughly than necessary (out of proportion to their usefulness)?*

Mahler: The CAS has been wrestling with the issue of allocating space on the syllabus at least since the early 1980's. Glenn and others are correct in saying that the process of selecting what students need to study is continuous and ongoing. It's not whether a reading is useless. It's whether a reading is less useful than something else we want to have on the syllabus. We need to improve the efficiency of our

education process. A paper when written may contain important new ideas, but that does not make it necessarily the best means of conveying those ideas to our students.

If a paper can be read, and easily remembered, it's great. Take the Philbrick paper on credibility from the 1981 *Proceedings*. The target shooting analogy is insightful; not only does it

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help you understand the material while you are studying the paper, it will also stay with you long after. The Philbrick paper is what we should strive for in education, rather than our current approach. We don't have enough learning efficiency in our education process. We need more bang for the buck!

Meyers: Efficiency is critical. We have to do more with fewer papers. The syllabus as a whole should have less detail on technical methods. Instead it should focus on the business use of the technical methods.

Also, I'd like to comment on multiple-choice questions, which form the basis for testing on the first several exams. We cannot, through multiple-choice questions, really test whether a candidate has a deep understanding of a subject. What we can do is test if the student knows the language and has a basic understanding of the concepts.

For example, on loss distributions and fitting them, it's not necessary to learn every distribution or fitting technique. I'd want students to know how to use loss distributions to calculate the credit for deductibles or estimate increased limit factors.

Mahler: One of the often overlooked aspects of designing a syllabus is making sure you set the right level of comprehension at which a given subject is to be learned and tested. For example, the required level of comprehension for a life or pension actuary with life contingencies material is much greater than needed by most casualty actuaries. As another example, if you learn how to work with a Pareto distribution, do you also need to learn the Loglogistic distribution?

The concept of efficiency also involves reducing the number of examples, so a student gets the idea and has a few practical examples to study. It is inefficient to present loss reserving via 10 papers written by 10 different authors at 10 different times for 10 different purposes. One or two well-written summary study notes can compare and contrast the different methods and present the ideas in a manner such that the students learn more in less time. The

CAS has been trying to add more well-written study notes to the syllabus.

Philbrick: On loss distributions, I think learning one or two is enough. We have to think about the material on the syllabus versus the practicing actuary. The practitioner might need to know 88 distributions. For some people who write like that, they want to put it all on the exam. Maybe learning fewer is learning better, since once you've completed the exams and have a need for using this or that technique to solve a practical business-related problem, you can look up the details.

Mahler: The current textbook discusses about 20 loss distributions. We attach to the exam the underlying information on about 14 loss distributions. Restricting the syllabus readings and the exam questions to about half a dozen common loss distributions would more efficiently get the important ideas across. (Practicing actuaries want access to as big a list of distributions as they can get.) If it cost a substantial amount of money to put each extra distribution on the syllabus, the CAS would be more careful in how it allocates the scarce resource of student's time.

Philbrick: The marginal value of learning a 6th distribution, or more, grows less and less.

Meyers: I'd like students to learn three distributions, with one of those three being an empirical distribution.

Mahler: Another issue at the forefront right now is travel time. The CAS Board has recently stated that five to seven years is a good median travel time. That's measured from the time you take your first casualty actuarial job until Fellowship. Historically, median travel time has been more like ten years. In my opinion, it would be incorrect to focus solely on travel time. The CAS needs to also focus on how much was learned and retained. Also, of the many who start the education process, how many persevere through to the end? What percentage of promising candidates, who would make fine Fellows, stop or leave along the way because of the defects of our educational system, as opposed to economic, personal, or other reasons? Is an educational system with a median travel

time of 6 years and a 30 percent success rate better than one with an 8-year median and a 60 percent success rate?

Feldblum: Candidates consider travel time and study time when deciding whether to pursue an actuarial career. We compete for the best candidates among a variety of other professions catering to the mathematically oriented student. We must choose passing ratios to accommodate the needs of students. The long travel time for the actuarial designation is one reason why the attraction of the actuarial profession is dropping.

Meyers: Should we cut down on the number of exams, have fewer of them?

Feldblum: The pass ratios make it very difficult to pass all the exams in five to seven years. A pass ratio of 25 to 30 percent reduces the attractiveness of the profession.

Meyers: A higher pass ratio, such as 50 percent, could possibly lead to a student passing, who had demonstrated a mastery of only 30 to 40 percent of the syllabus. I doubt that we would deem that acceptable.

Feldblum: The quantity of the material on the exams is not that different from years ago. However, I'd like to see us ask fewer questions that require memorization of details, of lists, or of formulas; and ask more questions that test the general understanding of a reading.

Meyers: I have looked at student performance on several past exams. One interesting finding—students "kill" the straight memorization questions; they do extremely well on them. Yet when it comes to a "thinking type" question, students don't do as well.

Feldblum: I don't mean the "thinking type" questions. I mean general questions that do not simply test the recollection of a specific formula.

Mahler: A couple of interesting ideas for education are being studied right now. For example, on DFA, rather than primarily teaching this material as part of a CAS exam, we are considering having a seminar. Another alternative to the traditional closed-book, timed exam would be open-book exams or even Internet courses. So the CAS may be moving away somewhat

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2002 Reserving Call Papers Highlighted

by Giuseppe Russo

Recently there have been significant developments in the area of property/casualty insurance loss reserve analysis. Many of these developments are discussed in the eight papers submitted to the 2002 Committee on Reserves' Call Paper Program.

Four of the papers address issues related to the Statement of Actuarial Opinion and codification, two critical areas continuously evolving for practicing actuaries. The first paper, which uses accounting literature as a reference, examines the interrelationship of materiality and the range of reasonable reserve estimates. A second paper addresses materiality from external points of view such as those of the U.S. Supreme Court, the Securities and Exchange Commission, and the Financial Accounting Standards Board. The author presents findings from research on materiality standards used by actuaries and the regulatory community in order to provide a framework that may be helpful to actuaries grappling with materiality thresholds. The third paper tackles the question of how to determine management's best estimate of loss reserves. The author utilizes economic and statistical decision theory to model a company's future value as a statistical decision function. One chooses the reserve estimate that mini-

mizes the average value of this function. The fourth paper uses U.S. industry commercial lines data to develop distributions of unpaid losses by line of business. The author combines these distributions by using statistical tools such as the standard normal copula to develop a company-wide aggregate unpaid loss distribution. This distribution can be used to address various issues such as enterprise risk, materiality, best estimates of reserves, and fair value.

Two papers deal with reserving for catastrophic events and latent exposures. As new risks develop, such as mold and terrorism, this topic will continue to become increasingly important both to the reserving actuary and government regulators. The first paper discusses the proposal adopted in 2001 by the NAIC regarding the establishment of pre-event tax-deferred catastrophic reserves. This paper gives background on the problem, provides a description of catastrophic reserves, and lists current constraints on establishing these reserves. The paper also discusses possible changes in the current design and outlines steps needed to enable and fully implement catastrophic reserves. The second paper analyzes market reactions to insurance carrier announcements of additional asbestos and environmental liabilities. The authors study

market data to estimate and document the market's reaction to these reserve increase announcements and then evaluate reasons for these reactions. This paper should serve as a reminder to all actuaries that their professional work products do matter to the outside world and that great care must be exercised when analyzing reserve liabilities.

The final two papers discuss reserving issues surrounding runoff entities. The first paper examines two runoff books of medical malpractice liabilities. The authors review some of the causes of distortions that may be produced by traditional reserving methods and suggest adjustments the reserving actuary may want to consider when evaluating a runoff book of business. The second paper takes the reader through a real-life example of a Florida workers compensation entity placed in runoff. The author discusses how reserves are established despite distortions in traditional reserving methods caused by data problems and changes in the legal environment (such as tort reform).

Papers will be included in the CAS 2002 Fall *Forum* and will be available on the CAS Web Site. Eligible papers will be considered for a share of \$2,500 in prize money to be awarded at the opening session of the Casualty Loss Reserve Seminar in September.■

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from the traditional approach as we go forward. I hope such changes will be tried carefully, one small step at a time.

Philbrick: I'm a fan of the open-book exam. Our traditional approach has been a closed-book exam with a strict time limit. In real life my boss might give me a project to complete within a limited time frame, but he doesn't say that I have to do it without looking at a book. An open-book exam may imply more questions for students that require them to think.

Mahler: Historically, questions requiring deep comprehension have been limited to the last few Fellowship ex-

ams. Even on these exams there would be at most two or three such questions. These questions are open-ended, with no single right answer—basically asking if you can write something on this scenario, which would be reasonable for a Fellow of the CAS to write. Such questions are difficult to answer and difficult to grade.

Meiers: When I look at people who make it through the exams and doing well as Fellows, they're good thinkers. Employers hire Fellows because of their ability to form a conceptual solution to a difficult problem. If they couldn't do this they would not be around long enough to take the Fellowship exams.

Philbrick: Employers are looking

for that; people who conceptualize an issue well.

Mahler: Another issue with the exams right now is the international issue. Should students principally practicing outside the U.S. and Canada have an alternative to taking a U.S. 7 or a Canadian 7 Exam?

Meiers: Let's look at the SOA. In their new education system, at first they omitted all material that was nation-specific. Then in the last six months, they revolted and put nation-specific material back on the syllabus. The practitioners, rather than the academics, led the charge to put the nation-specific material on.

Mahler: One possibility would be

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to keep the U.S. and Canadian Exam 7, and then add as an alternative an exam with European (and maybe some U.S.) content.

Meyers: I'd like to see the nation-specific material limited to one or at most two exams.

Mahler: One issue is whether we'll get enough volume of candidates from a specific nation or region of the world to justify the work of creating an individual exam. For example, if we knew we'd get 50 people per year from India, we'd likely work with them to create a nation-specific exam. In some countries there may already be a nation-specific exam being given by another organization for which the CAS might want to give credit.

Philbrick: Let's consider what would be on a nation-specific exam. Workers compensation is not handled the U.S. way in any other country; other topics would include tax laws and accounting. For a European exam, perhaps it could be half-European and half-country-specific.

Schwartz: *There's been some discussion of offering university credit for some exams. What is your quick view (then let's open it up to a fuller discussion)?*

Meyers: No.

Mahler: Skeptical.

Philbrick: Positive; hopeful.

Feldblum: I'll pass.

Mahler: In theory, it sounds good. However, I see potentially serious problems. Presumably the CAS would continue to offer exams on these subjects also. Then you would have the problem of having these exams be of comparable difficulty to getting credit via a university course. Also, what is covered and the grading varies between the many different universities in North America. If a student gets a B+, that may mean very different things at different universities. We would lose control and uniformity.

Meyers: If you know the material, then passing an exam on that material is not that big of a factor.

Schwartz: *To get around the problem of different grading standards, couldn't you have CAS standards, CAS*

recommended texts, or even CAS exams that the universities would simply administer?

Mahler: Then you're back to having a standardized test—a CAS exam or joint CAS/SOA exam.

Schwartz: *Are there enough statistics on the early exams?*

Mahler: It's true there's not enough about statistics on Exam 1 to prepare properly for Exams 3 and 4, yet I've been teaching an early exam (Course 4B before 2000 and courses 3 and 4 since then) for years now, and I have not noticed that much of a difference in students' preparedness with statistics since the introduction of the 2000 syllabus. It would probably be helpful to put statistics back on the exams and test it. In the 2005 syllabus, there may be some major restructuring of syllabus topics. It is a good idea for students to have a somewhat better foundation on statistics.

Schwartz: *What ideas are being discussed to restructure the exams?*

Mahler: I believe that one of the problems with our current exam structure, is the long time until most CAS students encounter material directly related to their jobs. Therefore, I would like to see the CAS consider having a short exam, perhaps two hours, and a relatively easy exam, early in the sequence of exams. The exam would introduce students to the basics of casualty actuarial science and property-casualty insurance. It would cover very basic ratemaking, very basic reserving, as well as some basic policy forms and underwriting.

Meyers: I am with you. I'm on the Exam Committee. We reviewed the old 3b, which was a memory exam, yet it let the student learn the language of insurance.

Mahler: The material I am proposing be on the new introductory exam is currently on later exams. The policy forms and underwriting could be taken from CPCU books or other material. Everything else would be taken from the new edition of the CAS *Foundations of Casualty Actuarial Science*. Something from most chapters except credibility could be put on this exam. (I assume credibility would continue to be covered on another early exam.) In some or all cases only a portion of the

chapter from *Foundations* would be on the exam. The most fundamental or important portions should be selected so as to keep the exam easy and the amount of reading manageable. Introducing basics on an early exam and following up with more advanced material on a later exam I believe is a good educational technique, as well as having practical value to students and to employers. If they chose to, a student could take this *Foundations* exam right before or right after getting their first casualty actuarial job.

Meyers: I am with you in concept.

Feldblum: The insurance material is more important to the practicing actuary than to the theoretical actuary. Exams 3 and 4 are too theoretical. They should be replaced by an early exam that teaches ratemaking, reserving, and reinsurance material. We have to be competitive with other professions; so the early exams should correlate closely with the kind of work that students are doing. Having highly theoretical material early in the syllabus is unwise; it dissuades the student from continuing on with the exams. Most of the students can not see the connection between the highly theoretical mathematics on the early exams and the work they are doing on the job.

Mahler: One impetus behind why the syllabus was created the way it currently is was to have the theoretical math up front right after you got out of college. The highly theoretical material does attract some people to our profession. A 26-year-old mathematics graduate student would be attracted to the profession by the mathematical and academic nature of the material on the early exams.

Meyers: I don't think we need to cover on the syllabus all the mathematical material, that only some actuaries use. Some of this advanced mathematical material can be covered elsewhere for those who wish to learn it. For example, Stuart Klugman is now offering an advanced seminar on loss distributions and it has had a healthy attendance over the years.

Mahler: Again you're back to the syllabus space being a scarce resource.

Schwartz: *Thank you very much for a great discussion!* ■

A (Company) Stock Answer

by Stephen W. Philbrick

Suppose you are employed by a publicly held company, and your employer makes it possible for you to buy company stock. How much should you buy? If the company does not offer a discount, there is a simple rule of thumb. The rule is: DON'T. An individual desiring diversification should not have more than 3 percent to 5 percent exposure to a single stock. But employment itself constitutes exposure to a stock. A company in financial difficulty may well engage in layoffs at the same time their stock price is lagging. A substantial exposure to company stock could result in a double whammy—weak stock performance at the same time that an employee incurs the financial impact of looking for a new job. It isn't immediately obvious how to translate the condition of employment into a percentage exposure to stock, but it seems likely that it is worth more than 3 percent to 5 percent. Thus, absent financial incentives, employees should avoid investing in their employers' stock.

Virtually all 401k plans have a variety of investment options, many of which include an option for company stock. In most cases, one should not allocate any portion to company stock. Why do companies offer this option? A company has a vested interest in stock ownership by employees. The main reason is that it helps align the interest of the employee with the interests of the company. If an important company decision arises that requires a vote of shareholders, such as a takeover proposal, it is expected that employees will vote in accord with the long-term best interests of the company. However, since an employee also faces an employment risk, it is not a financially prudent decision to buy stock in one's employer.

In my May column, I made this point, but I noted that there is an important exception. When company stock is offered at a discount, it may make sense to participate. This column

“If you work for any company other than the dozen or so companies with very stable stock prices, your exposure should be no more than half the discount.”

will explore how much stock you can buy in your employer when there is a financial incentive to do so. (Participation in employer option plans also requires an analysis of the benefits of the plans compared to the costs of concentration, but the rule of thumb developed in this column does not apply to options.) Some companies offer stock at a discount to the market price. Typically, this is coupled with a required holding period, to ensure that the employee does not simply flip the stock. Some plans include a guaranteed floor, a guarantee that the value of the stock will not fall below the purchase price. When a company offers stock at a discount, this is equivalent to offering an automatic return on the stock that exceeds the return available in the market. When this occurs, one can justify purchase of company stock. The obvious question is—how much?

There is a formula. The derivation is beyond the scope of this column, although I will note that the formula does appear in a slightly different form in a syllabus reading (Bodie, Kane, and Marcus, page 215). I will note that the answer is dependent on several parameters, including:

- The expected return on risk-free securities
- The expected return on the equity market in total
- The standard deviation of the equity market returns
- The standard deviation of the return on the particular stock in question
- Beta of the stock (the covariance of the particular stock and the market divided by the variance of the market)
- The annual discount

The formula is moderately complicated. I'll provide a spreadsheet on the CAS Web Site, which will provide some motivation to find the answer as well as a formula to calculate the answer for individual companies. However, based upon looking at a few sample companies, I've formed a rough rule of thumb:

For large, stable companies, one can justify an allocation in an equity portfolio equal to the discount. That is, if the annual value of the discount is 10 percent, one could have as much as 10 percent exposure to employer stock. If you work for any company other than the dozen or so companies with very stable stock prices, your exposure should be no more than half the discount. That is, if your employer offers a 10 percent discount on company stock, you can only justify holding 5 percent of your total equity portfolio in this stock.

Some people will find these rules surprisingly low. For example, at Enron, many employees were allocating most of their retirement funds into Enron stock. This could only be reasonably justified if the company was offering a substantial discount.

Diversification is a powerful tool. It takes a substantial discount to overcome the disadvantages of concentration in a single stock. ■

Palindrome Challenge

by John P. Robertson

“A na, nab a banana” is a *palindrome*, which means it reads the same backwards and forwards, ignoring spacing and punctuation. More familiar ones are “Madam, I’m Adam,” “A man, a plan, a canal: Panama!” and “Able was I ere I saw Elba.” This last is easily corrupted into “Amiable was I ere I saw Elba, Ima.” Sadly, because he was speaking to Eve and not to Ada, the reply to the first was not, “Adam, I’m Ada.” Lovers of palindromes were saddened when the shop in California, named the Yreka Bakery, went out of business.

In honor of the fact that 2002 is a palindromic year, we offer a creative challenge: create a palindrome that touches on actuarial science, insurance, or other areas related to actuarial work. These can be phrases, sentences, or poems. While “letter-by-letter” palindromes, such as those above, are what we are mostly looking for, “word-by-word” palindromes, such as, “So patient a doctor to doctor a patient so” will also be considered. There are several Web sites that list palindromes. A book with a good chapter on palindromes is *The Oxford Guide to Word Games* by Tony Augarde.

We will print the best entries in the February 2003 issue (two issues hence), and post all the entries on the CAS Web Site. Mark Saltveit, editor of the *Palindromist* magazine, has graciously offered to help judge entries for originality, difficulty, and wit. Due to the

need to review submissions, we need to receive them by October 10, 2002. Prizes of CAS coffee mugs, or the like, will be awarded to the three entries that are the best, in the opinion of the reviewers.

Submit your entries by e-mail to mmeringolo@casact.org or to john_robertson@stpaulre.com, or mail or fax them to the CAS Office. It’s fine to submit more than one entry, but only the first 99 entries from any one individual will be read. If submitting by e-mail include your name in the body of the e-mail, and in the body of any attachment (MS Word or PDF file preferred, but try us). Sometimes we cannot deduce your name from the e-mail address, or that address is missing by the time the e-mail arrives.

A Pile of Pennies

You were given a pile of more than 10 pennies and you were told that exactly 10 of them were face up. You were asked to make two piles with the same number of heads, under conditions that did not let you see the pennies, or feel them well enough to determine their orientation. You could manipulate and turn over individual pennies.

Bob Gardner was one of a number of solvers who suggested making one pile of 10 pennies and one pile of the remaining pennies. You then turn over each penny in the pile of 10. Now the number of heads in each pile is the same, namely $10-k$, where k was the number of heads in the pile of 10 be-

fore they were inverted.

But this is the CAS, so there were other creative solutions. **David Uhland** suggested balancing them all on edge, to make two groups that each had no heads. **Brian D. Haney** notes that



if you scrape one penny across the columns of the Lincoln Memorial on a second penny, a distinctive “wash-board” sound is made. This can be used to determine which side is tails, and then it is easy to finish the puzzle. **Stuart Klugman** sent a deliberately silly parody of a CAS exam answer, that is, he read the puzzle very literally. He notes that we didn’t specify how many piles one was to make, nor did we specify that you had to say which two piles had the same number of heads. So he separated the n pennies into n piles of one penny each, and observes that some two piles have one head each, and so the same number.

Nathan J. Babcock, **Don Behan**, **Roger Bovard**, **Lee M. Bowron**, **Peter Burchett**, **Jonathan Evans**, **Steve Fallon**, **Barry Franklin**, **Dan Goddard**, **Robert Giambo**, **Marshall Grossack**, **John C. Hanna Jr.**, **John Herder**, **Paul Ivanovskis**, **Alex Kozmin**, **Dave Oakden**, **Tim Polis**, **Marn Rivelle**, **Daniel Roth**, **Gary Venter**, **Christopher Yaure**, and **Mike Ziniti** also submitted solutions. ■

In Memoriam

Loren V. Petersen

(FCAS 1991)

Date of Death Unknown

William H. Burling

(FCAS 1928)

April 4, 2001

The CLRS in Arlington, VA—Register Now!

Don’t miss out on the 2002 Casualty Loss Reserve Seminar, September 23-24, 2002, and the Limited Attendance Seminar on Asset Liability Management and Principles of Finance, September 24-25, 2002, both to be held at the Crystal Gateway Marriott in Arlington, Virginia. Book hotel rooms by August 31 to receive the special rate and register online at www.casact.org by September 6 to avoid late fees. ■