The
# Actuarial Review

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## The CAS as an ERM Role Model

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## The Actuarial Foundation Highlights Accomplishments at CAS Spring Meeting

Paul Braithwaite, CAS President-Elect—Representatives of the Actuarial Foundation (TAF) were in attendance at the 2005 CAS Spring Meeting in Phoenix, Arizona, to speak about the good work and many success stories of Foundation initiatives over the past year. As exhibitors, they were on hand to answer questions and share the many successes of the actuarial profession's only independent philanthropic organization. During the CAS Business Session, we heard from three enthusiastic Foundation supporters. .......... 15

## CAS Publications to Undergo Changes

Curtis Gary Dean — The *Proceedings* will no longer be the vehicle for publishing peer-reviewed papers. Instead, a soft-cover semiannual journal will take its place. One name being considered for the new journal is the *Journal of Casualty Actuarial Science*, but the implementation task force is still considering naming options. The focus of the journal will continue to be high-quality applied casualty actuarial science. .......... 27

## The CAS Office is Moving!

The CAS Office is relocating a few blocks from its current location in Arlington, Virginia. It is anticipated that the move will take place in early December 2005. The move will not affect the Fall exam registration or administration. Details will be provided on the CAS Web Site as the move date draws near.


Illustration: Dan Magnolia

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*Institute of Actuaries President Michael A Pomery, CAS President Stephen P. D'Arcy, Immediate Past CAS President Mary Frances Miller, Faculty of Actuaries President Harvie W. Brown.*

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*Immediate CAS Past President Mary Frances Miller*

# Miller Nominated for Honorary FIA

Mary Frances Miller has been nominated as an Honorary Fellow of the Institute of Actuaries. Leaders of the Institute of Actuaries nominated Miller at the Institute's Council meeting on May 9, 2005. Miller's nomination is in recognition of her contributions to the international actuarial community and, in particular, for her role in achieving the March 2005 signing of mutual recognition agreements between the CAS and the Institute of Actuaries and Faculty of Actuaries. Miller, who currently chairs the CAS Board of Directors, was the chief advocate for mutual recognition.

As an Honorary Fellow, Miller would be able to use the designation Hon FIA. Miller's election to Honorary Fellowship will need to be approved by a ballot at the forthcoming Annual General Meeting of the Institute of Actuaries.

# Editor's Notes

The "Actuarial Revue" lives! Joe Pietrazewski, who was awarded the prize for naming the parody, suffered a fit of creative frenzy during a late-night study session and composed a half-dozen articles. We now have enough articles to make a single, albeit short, issue of "Actuarial Revue" a reality. Thanks to you who contributed your time, efforts, and wonderful sense of humor. Time permitting, we will post the "Actuarial Revue" on the CAS Web Site soon after the next issue of *AR* is mailed.

The CAS Committee on General Business Skills Education has developed an online list of publications that CAS members might find helpful with respect to the nontechnical aspects of professional actuarial work. The committee wants your suggestions for relevant books and articles, so please check out http://www.casact.org/pubs/GBSE/. More information about the committee and its function will appear in the November issue of *AR*.

Speaking of books, the CAS office received a copy of the book *The Secrets of Economic Indicators: Hidden Clues to Future Economic Trends and Investment Opportunities*. It was written by Bernard Baumohl and published in 2005 by Wharton School Publishing. Baumohl was an award-winning economics reporter for *Time* magazine for two decades, and he currently is director of an economics consulting firm. The author says, in his preface, "The subject of economic indicators can be lethally boring because of its impenetrable jargon and reliance on tedious statistics. I realized…that my biggest challenge… was not simply to identify and describe the world's most influential economic indicators, but to make the whole subject approachable and even—dare I say it—interesting." The 366-page book describes dozens of economic indicators, shows samples of many of the published reports, gives the Web sites where you can find them, and discusses why, when, and to what extent different financial markets react to them. Yes, the book *is* well-written *and* interesting. Please contact the CAS office if you would like to read or review this book.

PAUL E. LACKO

# Evolving Techniques and Capabilities

When and how will the economy react to the Fed's continuing increases in short-term interest rates? Is there a real estate bubble? When will the real estate bubble burst? When will the insurance cycle turn again? How can we guarantee that a seemingly adequately capitalized insurance company will still be in business two years from now?

So many questions. So few answers. But we do seem to be making progress.

When I started in this business, a model was a theoretical construct, not an analytical tool. The model guided one's selection of what variables to measure and what calculations to perform on the data. Mainframe computers collected a lot of data, and sophisticated in-house systems could even generate loss triangles and print them on microfiche.

Note to readers born after the mid 1960s: Microfiche, a form of hard-copy output, was an incredible leap forward in data storage technology. Dozens of pages of paper output could be printed in extremely small font on a single rectangle of translucent or transparent plastic. These were a wonderful invention at the time, because an entire file-room's worth of paper reports could be stored in a couple small boxes on a shelf at one's desk. All you needed was a fiche reader, which was a desk-top projection screen that worked just like a microscope: turn on the small light, place the fiche card on the glass slide, look at the screen in front of you, adjust the focus, and move the fiche around to view different pages.

The data then had to be converted to another medium before any serious data processing could be done. "Data processing" means someone, a clerical assistant, perhaps, wrote down the numbers on paper and then did all the calculations manually with a desktop calculator or entered the numbers into a computer program written specifically to accomplish the task at hand. (Some desktop calculators often did only addition and subtraction.) Programming was tedious and time consuming, but it beat calculating manually. Most programming software allowed one- and two-dimensional arrays of up to several hundred elements. (APL, an important exception, was designed specifically to work with large *n*-dimensional data arrays. But most of us wrote programs in BASIC or FORTRAN or PL/1.)

With the program written, tested, debugged, and saved, calculations could be done again and again. Open the old program file, enter new data, run the program, and pick up the paper output.

Technology had not yet achieved the best of all possible worlds, though. Processing time could be very slow—several minutes to several hours. A simulation study with 10,000 iterations could take several *days*. All the output was hard copy, and printing was slow by today's standards. It seemed like printer speeds were measured in pages per *hour*.

**When I started in this business, a model was a theoretical construct, not an analytical tool. The model guided one's selection of what variables to measure and what calculations to perform on the data.**

Computer-generated graphs were poor-quality at best, so you had to do your graphs by hand with colored pens. Or maybe your actuarial department had purchased a "plotter," a special hardware tool that had moveable arms. Colored pens were stuck into the plotter's moveable arms. Your program moved the arms around and lifted the pens up and down, thereby drawing points and lines on the paper.

Things sure have changed, haven't they? Nowadays we

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## MR Fears Validated

Dear Editor:

The announcement of the mutual recognition (MR) agreement recently signed with the U.K. Faculty and Institute of Actuaries ("Mutual Recognition—At Long Last," *AR* May 2005) confirms my fears about MR, validates my decision to oppose the CAS constitutional change, and reveals that I was correct in characterizing the issue as one of international trade economics rather than professional reciprocity.

Why? It will be difficult for CAS Fellows who don't possess the FFA/FIA to find quality work in the U.K.—they are at a competitive disadvantage in the U.K. without it, but they can't obtain it without working there. In contrast, FFA/FIA wishing to make a grand entrance to the U.S. market must merely complete some paperwork and register for a course on professionalism (COP). (Even the COP may conceivably be offered internationally.) Everyone has heard the Catch-22 of employment stated as "you can't get experience without a job, but you can't get a job without experience." As with the Canadian FCIA requirements of work experience in Canada, the current international societies insist on a playing field that is not level. Alas, the CAS has once again gone out of its way to accommodate them. Axiomatically, this will diminish the relative value of the FCAS designation in our global marketplace over time.

**...the current international societies insist on a playing field that is not level. Alas, the CAS has once again gone out of its way to accommodate them.**

*—John W. Rollins*

Careful reading of the announcement shows that an FCAS desiring an FFA/FIA must, in particular, obtain "recent practical experience, *one year of which was in the U.K. or Ireland*" (emphasis mine), while an FFA/FIA desiring an FCAS need not obtain any work experience outside the U.K. Assuming an equivalent marginal value for U.K. and U.S. home country designations when working in the country, this has the market effect of allowing an influx of new FCAS from FFA/FIA professionals with no U.S. experience, while restricting the supply of prospective new FFA/FIA from current FCAS with no U.K. experience.

*John W. Rollins, FCAS, MAAA*

## Confidential For A Reason

Dear Editor:

Charles L. McClenahan asks the wrong question when he asks, "What is it in the Actuarial Report, or in the Actuarial Opinion Summary to be added with the 2005 opinion, that is appropriate for management and regulators to see, but not for shareholders, policyholders, or claimants?" ("Random Sampler," May *AR* 2005). Those are not the parties for which confidentiality of proprietary information is an issue. The purpose of the confidentiality requirement is to keep information from competitors. Any Actuarial Report worthy of the name will include a discussion of why the data and financial numbers are the way they are. That explanation discloses the nature of the competitive advantage of the risk-assuming enterprise. For the commercial insurance company, this competitive advantage lies in both underwriting and claims handling. Confidentiality is even more of an issue for captive insurance companies because the why often reflects the competitive advantage of the parent company in its marketplace.

*Oakley E. (Lee) Van Slyke, FCAS*

**The purpose of the confidentiality requirement is to keep information from competitors.**

*—Oakley E. (Lee) Van Slyke*

**Speak Up!**

*The Actuarial Review* always welcomes letters and story ideas from our readers. Please specify what department you intend for your item—letters to the editor, news, Brainstorms, It's a Puzzlement, etc. Send your comments and suggestions to:

*The Actuarial Reivew*
Casualty Actuarial Society
1100 N. Glebe Rd., Suite 600, Arlington, VA 22201

Or e-mail us at AR@casact.org

## Classes of Membership Redux

Dear Editor:

While reading the story on the Report of the Task Force on Class of Membership ("Board Discussion on Classes of Membership Continues," *AR* November 2004), I noted that the main argument against eliminating the Associate designation was the indignation of some Fellows who believed they worked harder. They make an excellent point. Let's carry that thought to its conclusion. How many Fellows out there have not passed all the exams on the 2005 syllabus? Exactly! Therefore, I propose that the CAS start from scratch and require everyone, including all current Fellows, to qualify under the existing syllabus. OK, not really, but think about that when discussing the fairness of turning Associates into Fellows. Most of us have had different, but challenging, mountains to climb. The inclusion of actual work experience is long overdue.

*Alan R. Clark, ACAS*

### Kudos for Puzzles

Dear Editor:

I would like to submit an answer for the May 2005 "It's A Puzzlement." It is simply 12 as 2+1+3+6=12. This is not elegant as there is not much to explain. But I would like to add that this problem was very funny. It is just so amazingly built to direct everything toward 15. As for most problems in life, there is always a solution that is obvious, easy, quick and…false. But when you open your mind a little, the real solution is just as easy.

I would like to take this opportunity to thank those who are in charge of finding these puzzles. The selection is always interesting. I rarely take the time to send you an answer, but I really wanted to let you know that I appreciate your puzzles and it is always the first thing I look for in *The Actuarial Review*.

*Jean-Denis Roy, FCAS*

## The Polls Are Open!

Fellows are reminded to cast their ballots for the 2005 CAS elections. Fellows who registered for online voting can cast their ballot through the CAS Web Site by accessing the Web page at www.electionsonline.us/cas. On August 1 the CAS Office mailed the paper ballot package to Fellows who did not register for online voting.

Thomas G. Myers is the candidate for president-elect. Candidates for director positions are Irene K. Bass, Brian Z. Brown, Clive L. Keatinge, Donald F. Mango, Glenn G. Meyers, Roosevelt C. Mosley, Arlie J. Proctor, and Kenneth Quintilian.

Fellows can visit the "Meet the Candidates" section of the CAS Web Site (www.casact.org/aboutcas/elections/2005/meet.htm) to learn about the candidates. Candidates provided a one-page biography, an additional page of relevant biographical information, a short statement entitled "Why I Want to Serve," and a brief statement identifying their positions on issues of special interest to them.

In the "Open Question Forum," which was open July 1-15, Fellows were able to pose questions to candidates. At the close of the forum, candidates had one week to respond to questions. A link to the questions and responses was posted in the "Meet the Candidates" section.

Completed ballots must be submitted online or returned to the CAS Office by September 1, 2005.

The 2005 Nominating Committee is composed of the two most recent past presidents—Gail Ross (chairperson) and Mary Frances Miller; one past board member—Janet Fagan; and four members, two who have been Fellows for at least ten years—Ann M. Conway and Michael L. Toothman—and two who have been Fellows for less than ten years—Dale S. Porfilio and Chester John Szczepanski.

## Chance Encounters

by Stephan Christiansen

Total Disclosure

"Oh my gosh, Perkins! That's NOT what I meant by total disclosure in reserving!"

# Third Annual ERM Symposium Held in May

**By Members of the Joint CAS/SOA Risk Management Section**

Over 500 risk management professionals participated in the 2005 Enterprise Risk Management (ERM) Symposium held in Chicago on May 2-3, 2005. The symposium was sponsored by the Casualty Actuarial Society, the Professional Risk Managers' International Association (PRMIA), and the Society of Actuaries. It featured six general sessions and over 30 concurrent sessions with presentations from more than 100 ERM practitioners. Many of the presentation slides and audio files from the presentations are available on the Web at www.ermsymposium.org/presentations.html. To entice you to explore further what you may have missed if you were unable to attend, we've selected some highlights from the general sessions to share with you.

**...Risk management process and improved senior management communication around risk management were being recognized as critical competitive advantages.**

## Current Thinking on Risk Management: Not Fooled By Randomness

Shaun Wang, director of the actuarial science program, risk management, and insurance department for Georgia State University, introduced the need to define and evolve ERM frameworks beyond the silos that exist, involving both practitioners and academic thinkers to build the theoretical foundation for this new discipline. Nassim Taleb, author of *Fooled By Randomness,* stressed that attendees need to discard their Gaussian views and look at alternative risk measures for such processes where the outliers contain all the information. Leslie Rahl, president of Capital Market Advisors Inc., expanded on the galaxy of risks and the importance of valuations.

## Proper Alignment of Senior Management Measures and Incentives

Bennett Stewart, senior partner of Stewart Stern & Company, discussed common pitfalls from several case studies that identified earnings that may be manipulated by management as a poor management performance metric. He went on to state that increasing transparency and offering more frequent financial reporting in the absence of earnings guidance actually decreased stock price volatility. He proposed that to optimally manage businesses, an alignment of management performance measures was needed. He also proposed that incentive caps could actually destroy value. His conclusion was that, in order to achieve optimal growth in long-term firm value, effective performance measures are essential to balancing risk and reward, and the competing interests among shareholders, customers, executive management and all employees, .

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## About the Joint CAS/SOA Risk Management Section

During its March 2-3, 2005 meeting, the CAS Board approved joint sponsorship of a Risk Management Section with the SOA. The mission of the Section is to advance the actuarial profession by assisting members of the Section with the educational, research, networking, and other specialized needs that arise in the risk management area of actuarial practice. CAS members interested in joining the Section can find an application form and more information at http://www.casact.org/coneduc/rms/.

# The CAS as an ERM Role Model

The first company to offer dental insurance as an employee benefit was a dental supply company. This was not done because its employees had especially bad teeth, or because its workers were clamoring for better dental hygiene. It was a strategic business decision. If dental insurance became a popular employee benefit (which it did) the demand for dental supplies would increase dramatically and the company would profit from increasing sales. By demonstrating that dental insurance could be a valuable employee benefit, this firm helped start an employee benefit trend that provided significant returns to the organization. Smart move!

Enterprise risk management (ERM) presents the CAS with a similar opportunity. The actuarial profession is one that stands to gain if ERM becomes a common practice. The first organizations to adopt ERM tended to be financial corporations (banks and investment firms) with ERM spreading more recently to insurers and nonfinancial companies. However, the basic principles of ERM are applicable to all entities, including nonprofits. If the CAS develops a successful ERM program, we not only improve the way we handle risk, we also give our members hands-on experience to develop their proficiency in the ERM arena, demonstrate that nonprofits can benefit from ERM practices, and draw attention to our expertise in this competitive field.

To accomplish this task, the CAS has established an ERM Task Force with the following charge and scope:

## Charge

This task force is charged with recommending a process under which the CAS could become an example of ERM best practices within the nonprofit arena. The task force is expected to conduct an ERM audit of the CAS, generate recommendations for dealing with the significant risks, and establish an ongoing ERM process for the CAS.

## Scope

- Hazard risks, including both direct and indirect losses due to terrorism
- Financial risks relating to both assets and liabilities, including pension exposure
- Operating risks, including the credentialing process
- Strategic risks, including the effect of competing organizations both within the actuarial profession and in the broader area of risk analysis

**If the CAS develops a successful ERM program, we not only improve the way we handle risk, we also give our members hands-on experience to develop their proficiency in the ERM arena.**

Lee Smith chairs the task force, which includes CAS members Craig Allen, Tom Conway, Jerry Degerness, and Chuck Emma; Todd Rogers, CAS director of finance and operations; and Mark Vonnahme, a faculty member at the University of Illinois. Mark previously served as CEO of CNA Surety and currently teaches a graduate-level ERM course. The task force submitted its interim report in May 2005 and will complete its final report this month. This topic will then be on the agenda of the August Executive Council meeting and the September Board of Directors meeting. (The CAS Board meeting will be held in Chicago September 15-16. Members are welcome to attend this meeting. Contact the CAS office for details.)

Thus, this is an opportune time for you to become involved in this new adventure. The field of ERM, which is only a decade old, is undergoing rapid growth and

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# New Fellows Try Out DFA Modeling Workshop

CAS Vice President-Admissions Thomas G. Myers issued a special invitation to Fellows earning their designations in May 2005 to attend a trial workshop on DFA Modeling, held May 12-14, immediately preceding the CAS Spring Meeting at Pointe South Mountain Resort in Phoenix, Arizona.

*Pictured in the front row, from left to right, are workshop instructor Joan Lamm-Tennant, and new CAS Fellows Summer Sipes, John Maher, Malgorzata Timberg, Ellen Fitzsimmons, and Quan Shen. Pictured in the second row, left to right, workshop instructors Abbe Bensimon and Glenn Meyers, and new CAS Fellows William Fogarty, Brian Donlan, Keith Curley, Robert Rowe, Liana St-Laurent, and Brandon Kubitz.*

The CAS Board of Directors approved the development of the DFA modeling workshop to serve as a potential admissions requirement to Fellowship and to meet various continuing education needs. The workshop's goal is to educate candidates and members to become proficient *users* of DFA Models (rather than proficient *builders* of DFA models). General Re Capital Consultants developed the workshop and model.

Prior to the workshop, the participants were required to read about a dozen DFA-related readings. During the workshop, the new Fellows heard a series of lectures introducing DFA-related concepts and performed hands-on activities emphasizing the use and interpretation of a simplified DFA model. Participants were required to bring a laptop computer to run a model for some mini case studies. After running the model, they answered a series of questions about various statistics derived from the model and interpretation of these statistics in a business environment.

Once the workshop is finalized, future participants will have to pass a test on the pre-workshop readings before registering for the workshop. Although not necessary for this trial run, future participants will be required to complete an independent case study project on a take home basis that would be due within one month of taking the workshop.

ERM Symposium
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## Chief Risk Officers (CRO) Forum

Shyam Venkat, a partner in PricewaterhouseCoopers LLC, led the general session "CRO Forum," which was an outstanding senior insurance risk management practitioner panel. This diverse panel of renowned insurance CROs included Robin Lenna, CRO, Met Life; Steve Manning, head of risk management, Lloyd's of London; Larry Moews, CRO, Allstate; and Don Watson, CRO, Ace. They discussed how they championed, established, and executed development of ERM frameworks in their organizations. They compared organizational structures/committees, objectives, roles, current achievements, goals, and priorities. All voiced increasing demands of them being made by their board, CEOs, and other parties such as regulators, rating agencies, and analysts. A common thread was that the risk management process and improved senior management communication around risk management were being recognized as critical competitive advantages.

## Ask The Experts

Dave Koenig, the chairperson of PRMIA, introduced the experts who gave closing remarks and answered questions. Joining him were Ed Dumas, senior vice president and CRO, Federal Home Loan Bank of Boston; Bill Panning, executive vice president and managing director, Willis Re, Inc; and Erwin Martens, senior vice president and CRO, TIAA-CREF. Martens remarked that the CRO role had expanded to include much more than market, credit, and operational risk, and now includes security and business continuity. Dumas contrasted the banking perspectives on ERM. The audience members posed several challenging questions and the panel responded with excellent responses and concluded that there were many remaining issues to address at future ERM Symposiums.

Speaking of which, the ERM Symposium will be back in 2006, again in Chicago. Watch your mailbox and e-mail in-box for more information.

DONALD F. MANGO

# Risk Management Research Imperatives

*Reprinted with permission from the July 2005 issue of the* North American Actuarial Journal.

The actuarial profession is aligning itself towards enterprise risk management (ERM), both in North America and around the world. This is unquestionably the right way to proceed, for ERM is not a fad, but the emerging science of a well-run company. The development of ERM in a firm parallels the core capabilities of a complex organism: information on external environment (via senses) and internal conditions; a processing center receiving reliable, timely and accurate information; an evaluation framework to decide upon action and response; a motor system to effect those actions and responses; and an overarching feedback system to ensure stability and sustainability. When viewed in this light, ERM can be seen as nothing less than the natural evolution of human systems and collectives. Borrowing from Tolstoy: what then must we do?

From a research standpoint, the needs are nothing short of critical. The first priorities should be to shore up the fundamentals, and build the foundation of ERM. This should include:

- framing of traditional practice areas as ERM for insurance, retirement, and benefit systems;
- establishing parallels between traditional practice areas and broader financial services risk management;
- conducting joint research across the traditional practice areas, to build the actuarial core of risk analytics; and
- conducting joint research across all industries, to develop the industry-neutral core of risk analytics.

While far from simple, these priorities can be addressed using traditional research approaches. The main challenges facing the actuarial profession in this space are logistical – coordination and communication.

What I will spend the remainder of this editorial discussing are what might be called the "second-story" priorities which may require a next generation evolution in research approach. The four areas I will focus on are:

1. Strategic Interaction Effects
2. Liquidity Risk
3. Operational Risk
4. Value Demonstration

## 1. Strategic Interaction Effects

Scientists are realizing that collective systems exhibit interaction effects that cannot be predicted from the behavior of the individual elements. J. Doyne Farmer of Santa Fe Institute has published several papers showing that capital market price volatility can in part be explained by the interaction of competing trading strategies among different types of traders. Avinash Persaud of Gresham College has written repeatedly on the paradoxical impact of market-sensitive risk management policies on banking system stability. His premise: introduction of market-based risk based capital requirements leads to uniformity of risk appetite among participants, and therefore uniformity of response to market volatility. The uniformity compounds and reinforces itself as participants react to each others' reactions, leading to market crises. Applying similar logic to the insurance market, it is likely that strategic interaction plays a material role in insurance pricing cycles.

When studying such systems, researchers must be wary not to extrapolate incorrectly from local conditions. These systems are non-linear, and the strategy assessment is multilateral not unilateral. Theories and policy recommendations may only be testable using nontraditional scientific approaches and media. Examples include simulated economies and agent-based models. Possible worthwhile research goals include strategy robustness testing (which plan works best, factoring in all the possible things others could do?) and policy recommendations (how should regulators monitor and control the system to maximize stability?). This is a great opportunity for collaboration outside insurance and retirement systems.

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# Reserving-Related Working Parties to Present Results at CLRS

In past years, the CAS Committee on Reserves (CASCOR) focused on eliciting reserve-related call papers dealing with the complex issues that challenge the property/casualty insurance industry. This year CASCOR focused on producing research, analysis, and papers that would assist the actuary and the student in dealing with specific areas not widely addressed in the past. Thus, two working parties were formed in late 2004, one to focus on tail factors, and the other on Bornhuetter Ferguson—initial expected losses. Both have been making much progress over the last several months.

The Tail Factor Working Party (TFWP), co-chaired by Steve Herman and Mark Shapland, has been "working its tail off" evaluating numerous tail factor methods. Starting from day one, the focus was to identify all such methods contained within CAS literature and then identify methods currently being used, but not contained within the literature. The laborious process yielded much fruit as more than twenty methods were identified. The next step involved obtaining data from numerous sources so that sufficiently detailed data could be used to test the various methods, and judge which were feasible to use under what circumstances. As this is written, the TFWP is completing its work and will be presenting its findings at the CLRS in Boston.

The first task completed by the Bornhuetter-Ferguson Initial Expected Losses Working Party (BFIELWP) was a survey of the member's workplaces (and the workplaces of other actuaries) regarding methods currently in use. The next task was identifying the currently available literature on this topic (literally dozens of papers) and summarizing the methods used therein to establish initial expected losses. Many of the methods that have been documented will be familiar to experienced actuaries, although everyone seems to have their own twist. Also, many methods work fine under several circumstances, but fail in others. The BFIELWP will compare and discuss the strengths and weaknesses of each method to address this issue. The BFIELWP will present its findings at the CLRS in September. The paper is slated for completion during fall 2005. Jeff Carlson and Chris Olson are co-chairing the working party.

Both papers will be available through the CAS Web Site when completed.

## IAA's Virtual Global Actuarial Library Is a Handy Tool

Researchers should know about a useful tool provided by the International Association of Actuaries (IAA) on their Web site, www.actuaries.org. On the site, the icon labeled "Virtual Global Actuarial Library" can launch searches into over 180,000 documents from over 70 sites of interest to actuaries, including libraries of actuarial associations, a number of academic libraries, those of the Organisation for Economic Co-operation and Development, the World Bank, the World Health Organization, and many other organizations.

Researchers can search within a selected group of sites, which drastically reduces the number of nonrelevant answers, or they can narrow down searches by selecting specific domains or libraries by type, language, or geographic areas.

Documents can be translated into one of the eight languages using the IAA's customized automatic translation tool. This tool is a work in progress that will give researchers the gist of the document or message, and will allow them to decide if they wish to have the document professionally translated. The languages available are Chinese, English, French, German, Japanese, Spanish, and Russian. The IAA is working on improving the translation tool by adding terms and expressions in a custom actuarial dictionary.

The IAA assembled this virtual global actuarial library to facilitate access to the organization's core body of actuarial knowledge and to professional information of interest to actuaries. The IAA believes this search tool is a very efficient way of sharing knowledge within the global actuarial profession and of improving the quality of actuarial services around the world. Full members of a full member association of the IAA, such as CAS members, are members of the IAA and therefore have free access to all these services. The IAA encourages CAS members to take advantage of this tool.

# CCA To Conduct Consulting Roundtable

The Conference of Consulting Actuaries (CCA) is offering "Small Consulting Firms & Practices Roundtable" on the afternoon of Tuesday, September 13 following the Casualty Loss Reserve Seminar in Boston. This roundtable focuses on running and marketing a small business. It is cosponsored by the CAS, American Academy of Actuaries, American Society of Pension Professionals & Actuaries, Canadian Institute of Actuaries, and the Society of Actuaries.

Conference members with several years of consulting experience and who run successful smaller consulting firms will lead the discussions. This roundtable is appropriate for actuaries currently working at smaller consulting firms, thinking about starting a consulting firm, and planning to consult part-time after retirement. Much of the discussion applies to small consulting practices at large firms as well.

Moderators for this roundtable are Margaret Tiller Sherwood, past president of CCA and president of Tiller Consulting Group in St. Louis; and Charles F. Cook, past member of the CCA and the CAS Boards of Directors, and president of MBA Actuaries Inc. in Mountain Lakes, New Jersey.

For more information on the roundtable and to register online, visit the CAS Web Site or www.ccactuaries.org.

In My Opinion
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download the data from one computer directly into another computer and import the data into a software package or a spreadsheet. We set assumptions and parameters in the software and get results almost instantly. We can fit data to curves, create graphs and charts, run thousands of Monte Carlo iterations using dozens of probability distributions as input variables, and never touch a piece of paper—until we report to senior management, of course.

Computer models have become increasingly important in the insurance industry over the last 25 years. We rely more and more on model outputs to generate distributions of outcomes, whether we're looking at pricing terrorism coverage, setting growth targets by territory for the workers comp book, or fine-tuning a private passenger auto rating plan.

In the predictive modeling session at the 2005 CAS Spring Meeting, panelist Cheng-Sheng Peter Wu pointed out that "predictive modeling" refers not so much to new techniques as to new *capabilities*. Data storage and data processing speed are no longer practical concerns for most of us. Computers can handle hundreds of variables and millions of data records in real time.

The hard part now is to collect and refine the data. Daniel Finnegan, president of ISO Innovative Analytics and co-panelist at the predictive modeling session, described the huge project underway by his group to collect, correlate, and analyze hundreds of data variables from dozens of sources. They want to create a statistical model of the U.S. virtually by person and by street address. Their longer-term goal is to create personal lines pricing models for the entire U.S.

Despite what Mr. Wu said, I think that there are new techniques, certainly compared to 25 years ago. A couple that come to mind are genetic algorithms and neural networks. Neural networks have proven useful, in the sense of being adaptive models that, in effect, fine tune themselves to improve their modeling capabilities as more data pass through the model. Actuarial models may not yet incorporate genetic algorithms, but applications may arise in the future. Genetic algorithms are tools for constrained optimization, and most actuarial models can be characterized as such. *(To be continued.)*

## Reinsurance Prizes Awarded

Ira Robbin and Jesse DeCouto were awarded the Ronald Ferguson Reinsurance Prize for their paper, "Coherent Capital for Treaty ROE Calculations." Doris Schirmacher, Ernesto Schirmacher, and Neeza Thandi were chosen as runners-up for the prize for their paper "Stochastic Excess-of-Loss Pricing Within a Financial Framework."

The authors presented their papers at the 2005 CAS Reinsurance Seminar in Hamilton, Bermuda last June. The papers are published in the 2005 Spring *Forum* and available online in the publications section of the CAS Web Site.

From the President
page 7

significant development. ERM began as an attempt to prevent the financial disasters that were caused by the misuse of derivatives. However, ERM is evolving into a method for optimizing the value of an organization by dealing with risk in the most cost-effective manner. Although there are common approaches to ERM, there is no standard method or single template that can be applied. Each organization has developed its own ERM application to fit its unique circumstances or the expertise of the individuals charged with this task. In most cases, the ERM process is kept confidential to maintain a competitive advantage for the organization or to avoid drawing attention to significant risks or opportunities the organization faces. This approach is good in that it encourages experimentation but unfortunate in that it makes it difficult to build on successful applications to advance the field.

**Determining appropriate measures and developing models for each element would be daunting. Fortunately, a key tenet in ERM, according to James Lam, one of the first chief risk officers and a key writer and speaker on ERM is, "Don't boil the ocean."**

The CAS intends to create an ERM model for a nonprofit organization that is conducted in the open and is shared with all interested parties. By publicizing our approach we hope to gain valuable insights from other experts who can suggest improvements and also to provide a roadmap for other nonprofits to follow. In this way we intend to improve and expand the use of ERM. By announcing and then meeting this challenge, we intend to draw attention to our approach and have it become recognized as a best practice in this area.

How can the CAS become a role model in the ERM arena? As stated in the interim report of the ERM Task Force: "The CAS will become an exemplar ERM organization by using best practices to develop their ERM program." This task force seeks to identify best practices by reviewing the approaches used by other organizations or creating a best practice, if none exists, for nonprofits. We then need to follow this approach to identify our key risks and opportunities with due consideration to how the risks are integrated, develop appropriate measures and models for the key risks, evaluate the different methods for dealing with these risks, select the optimal method, and monitor the results. These steps, the standard steps in traditional risk management, have not changed as risk management has evolved into ERM, but the risks and opportunities considered have grown from pure risks to all types of risks and opportunities. As almost all ERM applications include one or more

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## ERM and Y-O-U

How can you get involved in enterprise risk management (ERM)? There are a number of ways:

- **Online ERM Course.** For those interested in learning about ERM, the CAS is developing an online course on ERM. The first offering should be in fall 2005.
- **Risk Management Section.** For those who would like to help develop this field or to network with other actuaries involved in ERM, the CAS and the SOA are jointly sponsoring a Risk Management Section that all members are eligible to join. This section puts out a newsletter, maintains an online message board, and conducts educational and networking functions. See page 6 for more details.
- **ERM Committees and Task Forces.** Those interested in working on a committee or a task force dealing with ERM can contact John Kollar, our first vice president-risk integration. This new vice president position was created to deal with the numerous developments in ERM and other risk management areas. The CAS encourages you to write to John at jkollar@iso.com if you have questions about developments in this area or if you are interested in working on a committee or task force dealing with ERM.

The results of the work of the ERM Task Force will be announced shortly after the September Board Meeting. Look for this information and get involved in our ERM process.

# How Do You Turn Risk Into Opportunity?

The Image of the Actuary Campaign needs your help. Now is the time to deliver on the campaign promise to educate business leaders that the actuarial profession can expand into more influential roles in both the traditional and nontraditional sectors. What better way to reinforce the "Turn Risk Into Opportunity" campaign theme than to showcase real-life examples of actuaries doing what they do best: quantifying the unknown so business leaders can make informed decisions that have a demonstrable effect on shareholder value.

Actuaries

The Best-Kept Secret in Business™

How do *you* turn risk into opportunity? If you, or someone you know, have a story about how you personally turned risk into opportunity, please share it with the profession. Help demonstrate to the CEOs and CFOs of the world that actuaries truly are "the best-kept secret in business." Go to the Image Campaign Web Site at http://www.imageoftheactuary.org/pioneersTell.php to tell your story.

While you are visiting the Image Campaign Web Site, be sure to look around at the enhanced and expanded content. A Campaign Tool Box has been created to assist you with communicating the image campaign theme and messages. Use the content and graphics that are provided, including articles, ads, and logos, to promote the image of the actuary in your organization. Also, be sure to sign up for Image Watch, an e-mail update on the campaign, so that you can be alerted when new content has been posted.

Visit the Image Campaign Web Site today at www.imageoftheactuary.org.

From the President
page 12

hazard risks in the key risks involved, the expertise of CAS members in quantifying these risks is an essential element to successful ERM approaches. This is why the CAS has a significant advantage over other organizations in developing a best practice in this area.

At first glance, establishing an effective ERM program appears overwhelming. The risks and opportunities that the CAS or any nonprofit faces are extensive—property or liability exposures, financial losses due to market conditions or fraudulent activity, business interruption risks, competitive pressures, regulatory sanctions, technological changes, international growth, and new areas of actuarial applications are only some of the risks and opportunities confronting the CAS. Determining appropriate measures and developing models for each element would be daunting. Fortunately, a key tenet in ERM, according to James Lam, one of the first chief risk officers and a key writer and speaker on ERM is, "Don't boil the ocean." A successful ERM program will identify the critical risks and opportunities and address them first, and not try to deal with every risk at once. Thus, prioritization is an essential initial step in ERM. We can take that step and model how other nonprofits can do the same. In fact, becoming an exemplar for ERM is, in itself, one step in ERM, as it can create a strategic opportunity for our members.

There is a tremendous need for research on a variety of ERM topics, including developing methods to deal with operating risk, risk aggregation, risk integration, and strategic risk. Actuaries can add value to this field by using our skills and experience to develop new methods of quantifying risks identified in the ERM process, particularly relating to operating risk.

The CAS is doing its best to showcase casualty actuaries as leaders in ERM. It will be up to you, our members, to take advantage of the opportunities this attention will generate. Casualty actuaries need to be in the forefront of developing solutions to ERM's unanswered questions. The value that we bring to the ERM process will determine our success as ERM practitioners.

## *Forum* Errata

The 2005 Fall *Forum* contains an omission. In the paper "The Analysis and Estimation of Loss & ALAE Variability: A Summary Report" by the CAS Working Party on Quantifying Variability in Reserve Estimates, author David L. Ruhm was inadvertently left out of the author list on the page 29. The CAS regrets the error.

# Windy City to Host September Seminar on Predictive Modeling

**By Ronald T. Kozlowski, Chairperson, Committee on Special Interest Seminars**

Learn how insurance entities are using predictive modeling techniques for marketing, underwriting, pricing, and fraud detection at the CAS Special Interest Seminar on Predictive Modeling, September 19-20 at the Westin Michigan Avenue Chicago.

Predictive modeling is an idea whose time has come. Simply put, predictive modeling is a process by which one uses statistical analysis of data to make predictions about future events or otherwise gain actionable insights about multidimensional problems. Predictive modeling can therefore serve as an aid to human reasoning, and has nearly unlimited applications. Chain stores use it to select their next store's location; baseball teams use it to recruit "undervalued" players. Dot-com retailers use it to predict their customers' next likely purchases; governments use it to detect instances of corporate corruption. Insurers can also use predictive modeling to select and retain optimal portfolios of policyholders.

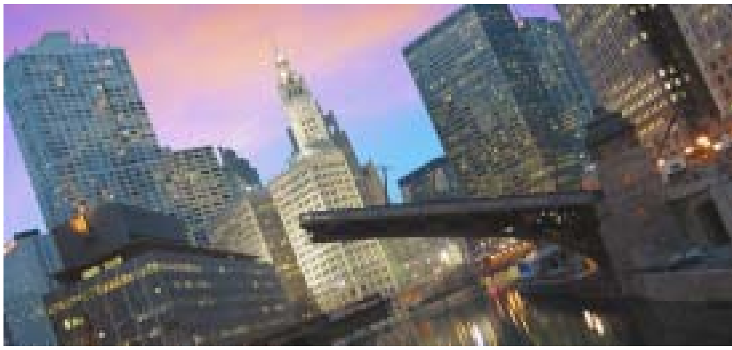


*Photo Credit: iStockphoto.com*

While predictive modeling has been around for a long time, notably in the form of regression analysis, recent advances in statistics and the proliferation of cheap computing power have dramatically increased its practicality and applicability. As a result, applying predictive modeling to the actuarial profession is limited only by actuaries' imaginations.

The purpose of this seminar is twofold. The first goal is to promote a better understanding of predictive modeling techniques in the actuarial community. The second is to further discuss current and future insurance applications of predictive models.

Basic and intermediate sessions will be offered covering such predictive modeling and analytic techniques as:

- Generalized Linear Models (GLM)
- Classification And Regression Trees (CART)
- Multivariate Adaptive Regression Splines (MARS)
- Neural Networks
- Generalized Additive Models (GAM)
- Clustering
- Principal Components Analysis
- Bootstrapping
- Model Validation

Perhaps the best-known application of predictive modeling in insurance is credit scoring, which will be the focus of the seminar. The successful utility of credit scoring has served as an early indication of the power of data mining and predictive modeling. Personal and commercial lines insurers are increasingly applying predictive modeling techniques in marketing, underwriting, rating, fraud detection, and retention and cross-sell analyses. These insurers are also using predictive modeling to identify appropriate case reserves for claims. Key topics of discussion for credit scoring will be data sources, business strategies behind predictive modeling projects, and model implementation.

This seminar is intended for actuaries and other insurance professionals at all levels who wish to learn about the potential uses of predictive modeling in their work. The seminar will benefit prospective users of all levels, from actuarial students and insurance analysts to insurance company management.

## CORP-Accepted Papers Posted on Web

The CAS Committee on Review of Papers has released its quarterly update of recently accepted papers. The CAS Editorial Committee will be editing these papers for inclusion in the *Proceedings of the Casualty Actuarial Society*. As of July 1, 2005, CORP has accepted the following paper:

1. "Modeling Financial Scenarios: A Framework for the Actuarial Profession" by Kevin Ahlgrim, Stephen D'Arcy, and Richard Gorvett.

# The Actuarial Foundation Highlights Accomplishments at CAS Spring Meeting

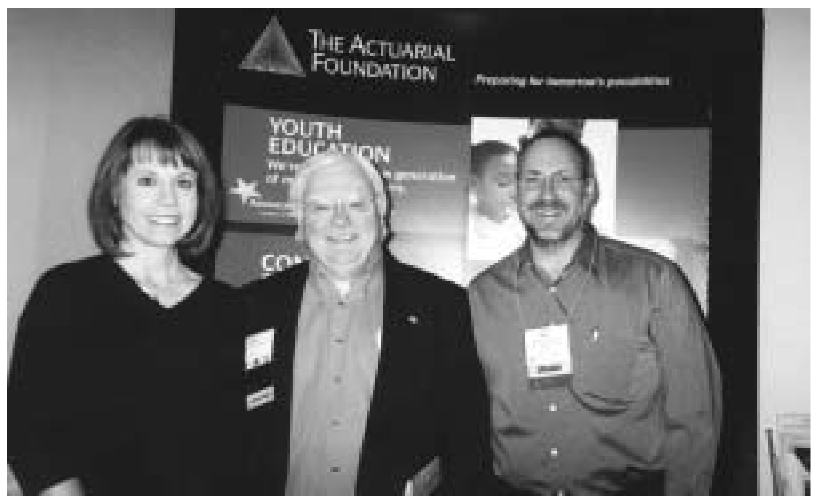
**By Paul Braithwaite, CAS President-Elect**

Representatives of the Actuarial Foundation (TAF) were in attendance at the 2005 CAS Spring Meeting in Phoenix, Arizona, to speak about the good work and many success stories of Foundation initiatives over the past year. As exhibitors, they were on hand to answer questions and share the many successes of the actuarial profession's only independent philanthropic organization. During the CAS Business Session, we heard from three enthusiastic Foundation supporters.

The first presenter for the Foundation was Bob Anker, CAS past president and current TAF chairman, who provided an overview of the many initiatives and good will efforts that the Foundation's programs encompass. He highlighted the Foundation's research and actuarial education efforts that support leading edge research aimed at the future of the actuarial profession. Anker reviewed the many consumer education activities aimed at providing information to the public, enabling them to find workable solutions to changing economic situations. He also encouraged the audience to consider volunteering to assist with a current consumer project on peril-specific disaster insurance.

Anker introduced CAS Fellow Ken Levine to highlight the Foundation's signature program, Advancing Student Achievement (ASA). For the past three years, Levine has volunteered as the lead mentor of the ASA program for Echo Mountain Elementary School in Phoenix. To the dismay, perhaps delight, of some, Levine opened his presentation with an actuarial exam question. This was not a game of "stump the audience" but an example of some of the mathematical concepts introduced to 3rd grade students as they learn about and understand complicated math problems, such as sampling with replacement. Levine expressed his enthusiasm, and that of local actuarial volunteers and others in the actuarial community, for the Foundation's Advancing Student Achievement program and its benefit to the students as well as the personal reward or ROV, Return on Volunteering.

To wrap up the Advancing Student Achievement presentation, we heard a compelling message from Kim Rimbey, math specialist at Echo Mountain Elementary School, an ASA school grant recipient. Rimbey noted the positive impact the volunteers from the actuarial community were having on the Echo Mountain students. She noted that the ASA grant has allowed the volunteers to implement scientifically based practices in relevant ways for their students. At the end of the first year, Echo Mountain 6th grade students achieved a higher score on the Stanford Diagnostic Test than any other 6th graders in the school district, and the 2nd graders scored among the top 12. Rimbey stressed the significance in this achievement in that they were the only representatives from a "disadvantaged" school to rank in that category, noting that it was highly uncommon to see a school with their demographics place so high in the comparisons.




*The Actuarial Foundation representatives, from left to right: Kim Rimbey, Bob Anker, and Ken Levine.*

Rimbey thanked the volunteers, the Actuarial Foundation, and those who contribute to it and strongly encouraged each of us in the audience to volunteer and share our love of math with schools in our communities.

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# Summer's Here and the Time is Right…to Register for CLRS

**By Scott Weinstein, Chairperson, Joint Committee for the Casualty Loss Reserve Seminar**

Summer is the time to register for the 2005 Casualty Loss Reserve Seminar (CLRS) and other key educational offerings following this popular seminar. The 2005 CLRS will be held at the Boston Park Plaza Hotel & Towers in Boston on September 12-13, and is a cosponsored by the CAS, the American Academy of Actuaries, and the Conference of Consulting Actuaries (CCA).

photo credit: iStockphoto.com

For 2005, the CCA is offering the afternoon session "Small Consulting Firms & Practices Roundtable" on September 13. The CAS will also offer a limited attendance seminar on Asset Liability Management and Principles of Finance on September 13-14.

The CLRS will again offer basic and intermediate reserving sessions, corresponding with our one-day registration rate available to CAS candidates and attendees who are not CAS members. Please pass this information along to those who would benefit from some reserving information.

With over 50 sessions offered in a variety of areas, CLRS attendees will have the opportunity to learn the latest information on lines of business; financial reporting; variability and ranges; international issues; catastrophes and mass torts; reinsurance; professional development; and emerging issues.

The deadline for early registration is Friday, August 26, after which the registration fees will increase by $50. The final day to cancel and still receive a refund (minus $50) is Friday, September 2, and all requests must be in writing.

Don't miss this opportunity to participate in these seminars and enjoy the city of Boston. For more information on the CLRS sessions and registration, visit www.casact.org.

# Charm City to Host 2005 CAS Annual Meeting

**By Courtney Mesmer, CAS Meeting Services Assistant**

photo credit: iStockphoto.com

There's more to Baltimore than the Maryland blue crab. If you haven't been to Baltimore before, you'll discover at the 2005 CAS Annual Meeting that Baltimore is a vibrant city offering enough historic sites, professional and collegiate sports, museums, shopping facilities, and attractions for a city twice its size. Baltimore is known as "Charm City" because visitors never fail to be charmed by its hospitality, Chesapeake Bay cuisine, and wealth of history—and 2005 CAS Annual Meeting attendees will be no exception. Take it all in, especially the continuing education opportunities offered by the program, November 14-17 at the Renaissance Harborplace Hotel in Baltimore.

The Renaissance Harborplace Hotel in Baltimore is just minutes away from the harbor's many attractions. Hop aboard a water taxi, twirl pasta in Little Italy, or enjoy an array of nightlife in historic Fell's Point. In addition, art, music, and theater enthusiasts can enjoy Baltimore's wide range of cultural activities.

The general sessions will examine many areas of interest to casualty actuaries, such as rating agencies, risk transfer, actuarial credibility, and enterprise risk management. During the course of the Annual Meeting, the CAS will also offer a limited attendance general business skills workshop, focusing on strategic thinking.

In addition to two scheduled receptions, attendees and accompanying persons will have the opportunity to enjoy a special Tuesday evening buffet dinner event at a unique venue.

Look for more information and registration materials in the mail and online at www.casact.org.

# New Fellows and Associates Honored at 2005 CAS Spring Meeting

**New Fellows, first row, from left:** Summer Lynn Sipes, Amanda Marie Levinson, Malgorzata Timberg, **CAS President Stephen P. D'Arcy,** Lien K. Tu-Chalmers, John Thomas Maher, Young Yong Kim. **Second row, from left:** Charles R. Grilliot, Liana St-Laurent, Melanie S. Dihora, Erica W. Szeto, Bruce George Pendergast, Yuxing Lei, Robert B. Katzman, Kirk David Bitu. **Third row, from left:** Jimmy L. Wright, Scott Robert Hurt, James M. Smieszkal, Ellen Marie Tierney, James Lewis Norris. **Fourth row, from left:** Matthew Peter Collins, Gavin Xavier Lienemann, Keith William Curley. **New Fellows not pictured:** Christopher M. Bilski, Amber L. Butek, James Chang, Hung Francis Cheung, Ryan Michael Diehl, James Donald Heidt, Eric David Huls, Robert B. Katzman, Hoi Keung Law, Yuxing Lei, Marie LeStourgeon, Laura Suzanne Martin, Michele S. Raeihle, Keith Jeremy Sunvold.

**New Fellows, first row, from left:** John D. McMichael, Nicholas John De Palma, **CAS President Stephen P. D'Arcy**, Ellen Donahue Fitzsimmons, Matthew James Perkins, Sébastien Fortin. **Second row, from left:** Brandon Earl Kubitz, Brian Michael Donlan, Shawn Allan McKenzie, John Leslie Baldan, James Paul McCoy. **Third row, from left:** Robert Allan Rowe, Ziv Kimmel, Quan Shen, Timothy C. Mosler. **Fourth row, from left:** David A. De Nicola, Nicholas Jaime Williamson, William J. Fogarty.

**New Associates, first row, from left:** Karen Beth Buchbinder, Stacey Jo Bitler, Melissa Diane Elliott, **CAS President Stephen P. D'Arcy,** Wei Li, Lijuan Zhang, Simon Castonguay. **Second row, from left:** John S. Flattum, Brent Layne McGill, Lisa M. Nield, Shannon Whalen, Lorie A. Pate. **Third row, from left:** Sébastien Fortin, Thomas Edward Meyer, Navid Zarinejad. **Fourth row, from left:** Jonathan W. Fox, Stephen C. Williams, Edward Lionberger. **Fifth row, from left:** Robert John Zehr, Frank W. Shermoen, Stephen K. Woodard. **New Associates not pictured:** Richard J. Bell III, Darryl Robert Benjamin, Denise L. Cheung, Solomon Carlos Feinberg, Alan E. Morris, Catherine Ann Morse, Damon Joshua Raben, Annemarie Sinclair, Thomas Richard Slader, Xinxin Xu.

# CAS Office Forms Member Resource Center

**By Sybil Petrey, CAS Manager of the Member Resource Center**

On May 1, 2005, the CAS launched the Member Resource Center, a new way for the CAS to provide courteous, timely, and accurate service to members. The MRC is a central resource for member information and support. Prior to launching the MRC, functional areas in the CAS office (membership, admissions, and meetings and seminars) each had their own administrative support. After careful thought and consideration, a new structure was formed that is more efficient and combines all administrative staff into one functional area.

There are many benefits of having the Member Resource Center. Organizationally, having multiple staff members trained to complete any administrative task creates depth. CAS members and candidates will continue to receive outstanding customer service and each MRC representative will be cross-trained to support both candidates and members. The MRC staff is headed by Sybil Petrey, MRC manager. Patsy Roberts, Jane Fulton, and Jessica Mientka complete the team as MRC representatives. Sybil brings three years of experience working in the CAS and vast knowledge of the areas of membership and meetings. Patsy has been part of the CAS staff since 2000 and is especially knowledgeable of all aspects of admissions and examinations. Jane and Jessica are new to the CAS staff, but have already shown enthusiasm and willingness to learn all aspects of the new MRC structure.

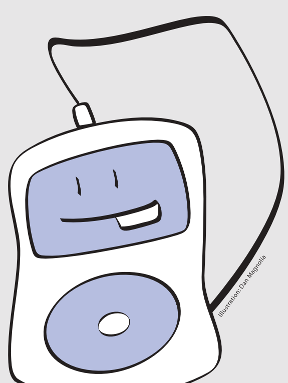
As always, the CAS will continue to provide superior customer service to members, but now at a much higher level. To contact the MRC, call the CAS office or send an e-mail to mrc@casact.org.

# U.K. Actuarial Profession Launches New Actuarial Journal

The Faculty of Actuaries and the Institute of Actuaries are launching a new international actuarial research journal in 2006. *The Annals of Actuarial Science* will publish research papers in any area of actuarial science. It will be published twice yearly, in the spring and the autumn. All papers will be subject to a rigorous peer-review process.

The U.K actuarial profession will continue to publish the *British Actuarial Journal,* which will contain the papers presented to session meetings of the Faculty and Institute along with transcripts of the discussions and debates.

## Lucky iPod Winner



Congratulations to **Carol Blomstrom** of Liberty Mutual, for winning the iPod drawing at the 2005 CAS Spring Meeting. The drawing was sponsored by the Tillinghast business of Towers Perrin.

The editor of *The Annals of Actuarial Science* is Professor Mary Hardy Ph.D., FIA, FSA (University of Waterloo, Canada), and the Associate Editors are as follows:

| | |
|---|---|
| Anthony Asher, FIA, FIAA | David Muiry, MB, BS, FIA |
| Philip Booth, FIA | Ragnar Norberg, Ph.D., Hon FIA |
| Andrew Cairns, Ph.D., FFA | David Paul, FFA |
| David Dickson, Ph.D., FIAA, FFA | Michael Shelley, FIA |
| David Forfar, FFA | Peter Tompkins, FIA |
| Lane Hughston, D.Phil. | Mark Trayhorn, FIA |
| Malcolm Kemp, FIA | Richard Verrall, Ph.D., Hon FIA |
| Angus Macdonald, Ph.D., FFA | Howard Waters, D.Phil., FIA, FFA |

The editor invites submissions in any area of actuarial science or practice. In particular, we are interested in papers that are applied in nature. *The Annals of Actuarial Science* welcomes papers in life insurance; general or property and casualty insurance; pensions; finance; health insurance; insurance economics; and econometrics. Original research, review papers, and case studies will all be considered for publication.

Authors are invited to submit papers for publication in *The Annals of Actuarial Science* directly to the editor at Statistics and Actuarial Science, University of Waterloo, Waterloo, ON N2L 3G1, Canada, or at mrhardy@uwaterloo.ca.

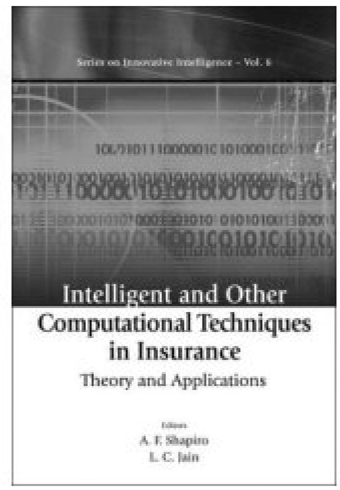
For more information (including instructions to authors), visit www.actuaries.org.uk.

LOUISE FRANCIS

# Filling Gaps in Predictive Modeling Literature

## *Intelligent and Other Computational Techniques in Insurance: Theory and Applications*

Edited by A. F. Shapiro and L. C. Jain (World Scientific Publishing Co. Pte. Ltd. 2003, $128)




On the subject of predictive modeling, books specific to insurance are hard to come by. *Intelligent and Other Computational Techniques in Insurance,* edited by A. F. Shapiro and L. C. Jain, helps to fill this gap. The book contains a collection of chapters on advanced modeling methods written by many of the leading authors on data analysis in the insurance industry. In the interest of full disclosure, I am also a contributing author to the book. And, while I may be a bit biased, I believe that this book is a valuable addition to actuarial literature.

In the first chapter, one of the book's editors, Arnold Shapiro, provides an excellent overview of neural networks, genetic algorithms, and fuzzy logic, the three techniques the book emphasizes. These techniques perform very different functions. In Shapiro's words, "Neural networks (NNs) are used for learning and curve fitting, fuzzy logic (FL) is used to deal with imprecision and uncertainty, and genetic algorithms (GAs) are used for search and optimization." The three techniques play key roles in what is often referred to as soft computing or data mining. Data mining procedures use software algorithms to apply computationally intensive routines that find patterns in data. In addition to NNs, FL, and GAs, applications using decision trees, clustering, and multivariate adaptive regression splines (MARS) are also presented.

While the book is not intended to serve as a comprehensive introductory text on data mining methods, it does supply a fairly complete introduction to some topics. The Shapiro chapter and a chapter I wrote entitled "An Introduction to Neural Networks in Insurance" describe the underlying statistical mechanism of backpropagation neural networks. I illustrate the principles with simple examples including trend estimation and fitting a function to loss development factors. Carretero supplies a good introduction to the topic of fuzzy logic in the chapter "Fuzzy Logic Techniques in the Non-Life Insurance Industry." Two applications are used to illustrate the approach: a bonus-malus system for reflecting driver experience in automobile rating and fuzzy clustering for classification.

The value of this book to actuaries lies in the many insurance applications of soft computing methods that are illustrated. The more common applications of underwriting and fraud prediction are represented (underwriting is perhaps the most frequent application illustrated). However, a number of other applications are also presented, including insolvency prediction, asset-liability management, mortality prediction, and stock selection.

*Intelligent and Other Computational Techniques in Insurance* also presents techniques that are not commonly included in data mining texts. One of these techniques, bootstrapping, is a nonparametric, computationally intensive method often used for deriving confidence intervals. Another is logistic regression, a member of the generalized linear model (GLM) family of models commonly used for classification applications.

For those new to predictive modeling, this book will not substitute for a general introduction to data mining. (For a list of my favorites, go to www.casact.org/coneduc/ratesem/2004/handouts/ and download handout 1 from DATA/TECH-1). However, the book is an excellent resource for those doing data mining in the insurance industry and is particularly strong in its presentation of a variety of insurance applications and techniques.

Opinion
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## 2. Liquidity Risk

Liquidity is defined as the ability to enter or exit a financial position (i.e., buy or sell an asset or derivative), in the volume needed, at a reasonable price, in the desired timeframe. Failure on any of these fronts is known as a "liquidity crisis," and is symptomatic of market incompleteness and inefficiency. Liquidity crises are becoming more common in the broader financial markets. One possible cause: liquidity requires diversity of opinion and losers, both of which are in increasingly shorter supply.

Per this definition, one could make the case that insurance cycles are actually liquidity cycles: not only price fluctuates, but also products offered and companies offering them. If insureds cannot secure the coverage they want, in the amounts they want, when they want, from their perspective the market has failed and there is a liquidity crisis.

Liquidity underlies the effectiveness of any hedging program – it presumes you can find a viable counterparty who can deliver in time. It sounds good in principle, but it is imperative that we acknowledge there are no outer space beings at the end of the counterparty rainbow. We are in a closed financial system. Hedging means transfer, and after the hedging stops, at some point the risk comes to rest in someone's portfolio. This retained risk must be evaluated at some point. The science of that evaluation involves concrete definitions for risk preferences and appetites, and expressions of utility.

Low liquidity valuation – private equity, opaque hedge funds, and real estate – is already an area of tremendous research in broader financial services. We must seize the opportunity to consolidate the risk evaluation framework across other low liquidity products – like most insurance products!

## 3. Operational Risk

This represents a great opportunity for actuaries. Per "International Convergence of Capital Measurement and Capital Standards," from the Basel Committee on Banking Supervision, "operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people, and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk."

The opportunities for actuarial contribution are clear. First, commercial property casualty insurance could be characterized as "insured operational risk." Also, best practice thinking in the analysis of operational risk is gravitating towards an actuarial approach—exposure bases, driver variables, frequency, severity, correlation, and convolution. See Ali Samad-Khan's "Why COSO is Flawed," at http://www.opriskadvisory.com/articles.html.

However, the research challenges are also substantial. Consider the case of a failed insurer. The causes of the failure may include under-pricing, under-reserving, uncontrolled growth, or poor management. In the context of the Basel definition, these certainly sound like operational risks. The lines between "operational risk" and "underwriting risk," "pricing risk," or "reserving risk" need to be much more clearly defined before insurer ERM can advance.

There are also what are termed "soft operational risks"—management integrity, succession planning, key person risk and knowledge concentration, knowledge management, intellectual property, and leadership compensation schemes. These risks arguably outweigh the more quantifiable technical risks, yet the science is in its infancy.

## 4. Value Demonstration

This could arguably be the Holy Grail of ERM efforts–the creation of tangible value for an organization. In 2003, the CAS put out a research proposal looking for evidence of ERM value in the

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### Humor Me

## Top 10 Complaints of Property/Casualty Actuaries

By Michael D. Ersevim

10) Those pesky autograph-seekers
9) The demanding schedule of also being an underwear model
8) Calculators are still too slow
7) The life actuaries have bought-out all the good ties
6) Being the moral compass all day long can be draining
5) The limits on gifts received from insurance commissioners are too restrictive
4) The exams are getting too "easy" and allowing four hours is three more than necessary
3) All of Feldblum's articles are too concise
2) Our dark tans betray our foot-loose and fancy-free lifestyles
1) Saving the world from tyranny one spreadsheet at a time leaves precious little time for catching up on volumes I- XC of the *Proceedings of the CAS*

JERRY TUTTLE

# The Color-Challenged Actuary:
## It's Not All Black And White

Some day I will retire from the exciting world of actuarial work. I probably will do some part-time work to earn some income, but I won't be selling house paint or cosmetics, and I won't be cutting bomb wires for the bomb squad. That's because I am color-challenged.

Color-*challenged*, mind you, not color-*blind*. A small percentage of males and a smaller percentage of females are born with various degrees of color vision deficiencies. Some people cannot distinguish between red and black for example, or see red, orange, yellow, and green as the all the same. More of us *do* see colors—just not as many as *you* see. We have difficulty distinguishing small differences among red, orange, yellow, and green. These colors may *all* seem somewhat shifted towards red. I stop my car for the top traffic light, but I don't really think it's red; I'm never sure whether a single flashing traffic light is red or yellow. In addition, someone with a weak recognition of *red* may not be able to distinguish *purple* from *blue*. We *see* the color; we just can't tell what it *is*.

I just don't even *think* in terms of colors. This is truly a consistent theme of my life. Here's an example: One Web site has a clever use of the Sesame Street characters to proclaim the daily Terrorism Alert Color. When I saw that page, I wondered why grouchy Oscar was the lowest terrorism level, and gentle Elmo was the highest. Someone had to explain to me that each character was chosen for his color—Elmo is *red* and Oscar is *green*—which simply hadn't occurred to me. I can *see* those particular shades of red and green. I just don't *think* in terms of colors.

I don't think my "color-challengedness" has hindered my career as an actuary—colors are not essential in what actuaries do. Colors are essential in some occupations and businesses (aviation, sea search, gardening, electronics, textiles, and the like), and colorblindness tests are not uncommon for prospective employees in some of those businesses. I passed the actuarial exams, but I wouldn't have an actuarial job if I had to pass one of those colorblindness tests with the numbers made of colored dots.

Colors have become increasingly important in actuarial work in recent years, with handouts and on-screen presentation in brilliant and numerous colors. Unfortunately, the subtleties of those pie and bar charts are usually lost on me.

To my surprise and chagrin, recently I received a color-coded spreadsheet, with the claims color-coded by line of business. I couldn't distinguish one line from another, and as I scrolled down the spreadsheet past where the color guide disappeared, I could no longer even remember the guide.

**...I wondered why grouchy Oscar was the lowest terrorism level, and gentle Elmo was the highest. Someone had to explain to me that each character was chosen for his color—Elmo is *red* and Oscar is *green*—which simply hadn't occurred to me.**

I recently attended a CAS online Web conference. There were 44 participants, and each person was assigned a unique color. Interestingly, for some reason a few names appeared in error on the list twice, so sometimes a name had *two* assigned colors. None of this helped me distinguish Bill from Bob, or Bill from Bill.

In Excel 2000, you can enter FORMAT CELLS FONT COLOR and choose among 56 different default colors for your font. So for example, you could make your auto claims values red and your GL claim values green. With conditional formatting, if a cell has a condition such as the value "AUTO," you can give it the font color red, and

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# CAS Fellows Eligible for Fellowship in Society of Actuaries in Ireland

The Society of Actuaries in Ireland (SAI) has announced that Fellows of the Casualty Actuarial Society (CAS) will be eligible for Fellow membership of the SAI.

Following the conclusion of mutual recognition agreements between the Institute and Faculty of Actuaries and the Casualty Actuarial Society, the SAI Council decided that CAS Fellows are eligible for Fellow membership of the SAI, subject to their having at least three years' recent appropriate practical experience, including at least one year's experience in the Republic of Ireland.

In addition to the experience requirement, in keeping with SAI's standard requirements for recognition, CAS Fellows applying for SAI Fellow membership will be required to:

- attest that they wish to pursue actively the profession of actuary in Ireland or to advise on Irish business;
- successfully complete the courses and professional development requirements prescribed by the SAI from time to time; and
- disclose to the SAI any public disciplinary sanctions that have been imposed against them by any actuarial organization of which they are a member.

Information about the Society of Actuaries in Ireland (SAI) can be found online at http://www.actuaries.ie.

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so on. Of course that assumes you can *recognize* red from among the 56 colors.

I put each of Excel's 56 colors in its own cell, and then I used Visual Basic to provide the COLORINDEX number for each of these colors. Surprisingly, Visual Basic does *not* assign unique

**Laser tag is a challenge... I kept shooting my own team, because I didn't recognize our team color.**

COLORINDEX numbers. For example, yellow, pink, blue, and light turquoise each appears twice. So if Excel and Basic can't agree on colors, what hope do I have?

In ancient times when men wore ties, one morning I decided to wear a white shirt with red stripes to work, and I picked a red tie to go with it. I felt quite well dressed that day until a friend mentioned that my shirt had *green* stripes, not red. When I buy a suit, I ask the salesperson to show me a few ties that go with the suit, rather than trying to pick ties out myself. My suits are blues and grays, by the way.

Laser tag is a challenge for the color-challenged. I attended a company event at a laser tag arcade. (Your kids can explain laser tag if you are unfamiliar.) We made a pretty sight shooting each other with our colored lights. Yes, colored—the *red* team and the *green* team. I kept shooting my own team, because I didn't recognize our team color. And I had to get so close to opposing team members to be *sure* of the color that they would shoot me first. Special note to actuaries: Detailed performance stats after each round indicated that I broke the arcade record for the largest *negative* score.

Recently I had a problem with a particular cell in a spreadsheet. A colleague looked at it and asked, "Didn't you notice that cell is a different color than the other cells, and didn't you wonder why?" Well... no... I didn't.

When I was in kindergarten, I had a box of eight Crayola crayons. I loved my box of eight crayons because I could identify each of them: red, yellow, blue, green, orange, brown, purple, and black. But I was in trouble when the box of 48 came out, and there were colors called green-blue, blue-green, green-yellow, olive green, sea green, spring green, and yellow-green. Nowadays there is a box of 120 different colors! You can actually see all 120 colors on Crayola's Web Site. Well, maybe *you* can see all 120....

(Editor's Note: Mr. Tuttle inadvertently submitted this article in font colors of periwinkle, pale blue, and lavender, but our printing process is unable to reproduce those colors. Mr. Tuttle graciously consented to plain black and white.)

# To Revise or Not to Revise

*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.*

Sue Signer, FCAS, MAAA, works for the consulting firm of Doubletake Actuaries Inc. Sue is the Appointed Actuary for On-The-Verge Insurance Company (OTVIC or the Company). OTVIC is a single state insurer that exclusively provides hospital and physician medical malpractice insurance with policy limits of up to $10 million per occurrence. Due to the hard reinsurance market, OTVIC has not purchased reinsurance for the last several years. In her role as the appointed actuary, Sue has been retained to provide an actuarial statement of opinion related to OTVIC's loss and loss adjustment expense reserves as of December 31, 2004.

Sue completed her draft loss and loss adjustment expense reserve analysis on January 20, 2005. This analysis indicated a substantial reserve increase from the Company's initially booked figure. While the Company's CFO thought several of the largest claims reserved by the claims department used an extraordinary level of conservatism, he adjusted the Company's loss and loss adjustment expense reserves to match Sue's estimate. Based on the revised reserve figures, OTVIC was very close to the regulatory action level under the NAIC Risk-Based Capital calculation. On February 20 (before the annual statement and opinion were filed), the CFO of OTVIC called Sue to inform her that the Company has been able to close several large, older claims during the first six weeks of 2005 for considerably less than the December 31, 2004 case reserves Sue used in her analysis. The CFO goes on to explain that the remaining claims have developed approximately as would have been expected based on the assumptions in Sue's analysis (this was later confirmed by Sue herself). The CFO insists that Sue revise her projected December 31, 2004 reserve estimates to consider this additional information. This additional information would put OTVIC considerably above the level where regulatory action would be indicated.

Can and should Sue revise her loss and loss adjustment expense reserve analysis to consider this favorable post year-end experience? Would your answer be different if the loss experience for 2004 and prior was materially adverse during the first six weeks of 2005?

**No.** Sue should not revise her analysis to consider loss experience after the end of the year, whether it was favorable or adverse. The projected reserves as of December 31, 2004 should be based on loss experience as it existed at

**Can and should Sue revise her loss and loss adjustment expense reserve analysis to consider this favorable post year-end experience?**

year-end. The other numbers presented in the financial statement are based on year-end data and the loss reserves should not be an exception. Since claims develop every day, projecting reserves based on data after year-end is unrealistic and creates an additional and dangerous precedent for Appointed Actuaries. The loss experience after the end of the year will show up in the quarterly filings the Company is required to make with the insurance department.

**Yes.** If she is made aware of the situation, Sue can and should revise her analysis to consider exceptionally

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# CAS Hosts WebEx Conference on Basic Education Initiatives

Following the success of its first Web-based conference earlier this year, the CAS hosted its second WebEx conference on June 28, this time for employers of actuaries. Chief actuaries and individuals responsible for administering student programs at their companies were the target audience for this one-hour session on basic education initiatives. People across the country from more than 80 locations participated in this distance-learning program. Joanne Spalla, vice president-marketing and communications, opened the conference and introduced Tom Myers, vice president-admissions, who conducted the presentation and answered questions from the participants.

"The education of casualty actuaries is one of the most important services of the CAS, and as the employers of actuaries, you are the consumers of this service," Spalla remarked to the audience. "We thought it was important to have this conference to make you aware of the changes that are coming up and to enable you to ask questions about them so you'll be able to take these changes into account in planning your student program."

Myers led the attendees through a series of slides covering verification by educational experience, computer-based testing, the code of professional conduct as it applies to candidates, the modeling workshop, and activities of the Task Force on FCAS Education. Participants were able to ask questions by submitting them through the WebEx program. Half of the conference was devoted to responding to questions about the changes to the basic education system.

Attendee feedback was favorable on both the use of technology and the presentation of content. Based on the positive returns, other WebEx conferences are being planned for the future.

The conference was recorded, and anyone whose schedule did not permit them to participate in the original conference can view it at their convenience through the CAS Web Site at http://www.casact.org/members/webex.htm.

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material levels of loss experience after the end of the year, whether it is favorable or adverse. Sue's responsibility to her client, and the regulators who rely on her report, is to provide the best estimates possible. The actuarial professional standards provide some guidance for Sue. Specifically, section 3.5 of Actuarial Standard of Practice 36 states: "In addition to the reserve methods used, the actuary should consider the relevant past, present, or reasonably foreseeable future conditions that are likely to have a material effect on the results of the actuary's reserve analysis."

Obviously, Sue needs to make sure the use of post year-end data is disclosed in both her actuarial report and the opinion. This action is further supported by the fact that the saving is associated with closed claims, which represents "true" savings, as opposed to revised incurred losses associated with open claims that might suggest case reserve manipulation. Unnecessarily subjecting the Company to regulatory action will distract Company management from focusing on the future and diverts the regulator's attention away from other insurance companies more in need of regulatory scrutiny.

**No and Yes.** One of the primary purposes of the appointed actuary's work is to provide information to help insurance departments in their responsibility for solvency regulation. As a result, while it might be acceptable for her not to revise her projected reserves for exceptional levels of favorable experience, it is irresponsible and a violation of Precept 1 of the Code of Professional Conduct for Sue to ignore material adverse experience that would suggest a need for regulatory intervention. At the very least, to be consistent with the ASOP 36 section 3.3.3 requirement to disclose items that represent significant risks and uncertainties that could result in material adverse deviation, Sue is required to disclose this known solvency related issue in her year-end opinion (thereby triggering regulatory action). Delaying regulatory action may well result in policyholders' being unable to receive the protection promised when their insurance coverage was purchased and may ultimately affect the community's access to affordable health care.

## Cultivate Potential Actuaries!

Want to help the CAS membership to grow? Consider volunteering as a University Liaison and connect with students with potential for actuarial careers. See the CAS Web Site at www.casact.org/academ/ulprog.htm for more details!

# Winning Rally

Actuarial thinking has many useful applications. I was surprised, however, to learn that it is useful when competing in road rallies. So says John Stenmark, CAS Fellow and former national rally champion.

Planning rally strategy is fairly involved. Prior to the rally, each two-person team gets a set of general instructions, which are basic guidelines for following the rally route. They can study these instructions ahead of time and try to become so familiar with them that they can make split-second decisions on the course. Teams get the actual route instructions a few minutes before they start.

A road rally is not a free-for-all for speeders. There are speed limitations and most of the time teams are given actual speeds to travel. Teams are automatically disqualified if the police stop them for moving violations like speeding.

The course is measured in hundredths, or even thousandths, of miles. When a car arrives at a checkpoint, it is timed to the hundredth of a minute. Your score is the difference between the perfect calculated arrival time and the actual arrival time in hundredths of a minute. For example, if you arrive on time your score is 0, and if you are one minute late your score is 100. The lowest score wins.

Getting to the finish line ahead of time is not rewarded, however. The penalty for being early is just as severe as for being late. One risk in running early is that sometimes the checkpoints cannot be easily seen in advance.

Being overly cautious can also cost you. If you stop or slow down dramatically in front of a checkpoint, you will be penalized. Penalties vary from rally to rally, and a "creeping" or stopping penalty can easily move a person from first place to third or fourth. People who work the checkpoint have the responsibility of assessing penalties.

Course rallys have all kinds of traps. Course developers may take road names or signs into consideration for these traps. The idea is to trick teams into following the wrong course to the checkpoint. Sometimes instructions may tell teams to divide their current speed by 1/2 and travel the resultant speed. So, if you were going 20 mph, your new speed would be 40 mph. The less numerate competitors often end up going 10 mph. Sometimes yellow road signs, like curve arrows, are used to direct your route through an intersection. Your general instructions, however, might tell you that all signs used on the rally will be on the right of the route you would have traveled in the absence of the sign. This trap can "drive" you insane when you are at an intersection trying to figure out which way to go. You may have numbered instructions and then additional lettered instructions that take priority over numbered instructions. It can get quite devious.

**Sometimes instructions may tell teams to divide their current speed by 1/2 and travel the resultant speed. So, if you were going 20 mph, your new speed would be 40 mph. The less numerate competitors often end up going 10 mph.**

The course designer, or rallymaster, creates the route but does not compete. Being a rallymaster is a lot of work. For a national or divisional rally, it can take months to design a good course. Once designed, the course is checked for accuracy by several teams who may not compete in the event.

It takes considerable effort to put on a rally. In addition to the rallymaster, there are many other workers, including those who work the checkpoints timing the

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cars. There are at least three workers for each checkpoint. Also, a lead car driver familiar with the course precedes the actual competitors and runs through the course about 30 minutes before the estimated arrival time of the first car to make sure that the checkpoints are open and that the integrity of the course has not been compromised.

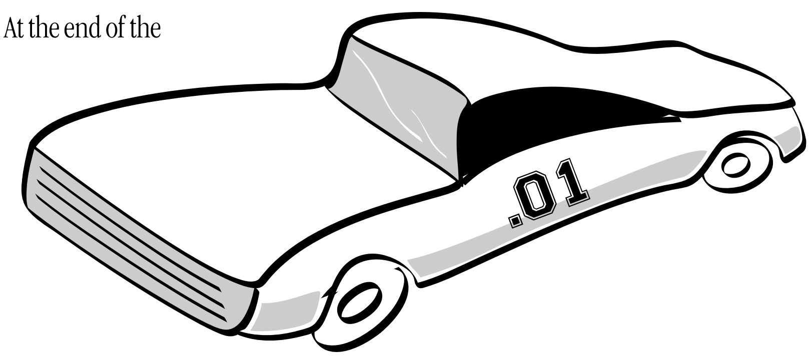
John Stenmark met his wife Janice at a divisional rally in Jackson, Mississippi in 1979. Janice and her partner won the race and John was the rallymaster. John and Janice discovered that they had a similar mental approach to competition. The following year he was rallymaster of a national rally in Jackson and Janice was again a competitor. The competition was even tougher, with teams converging from all over the country. Janice won the rally and John won her hand when he proposed marriage. A few months later they married. Until then they had both been navigators, so when they teamed up they realized that one person would have to switch to driver. John switched roles and Janice continued to navigate (which, in her opinion, is telling the driver where to go).

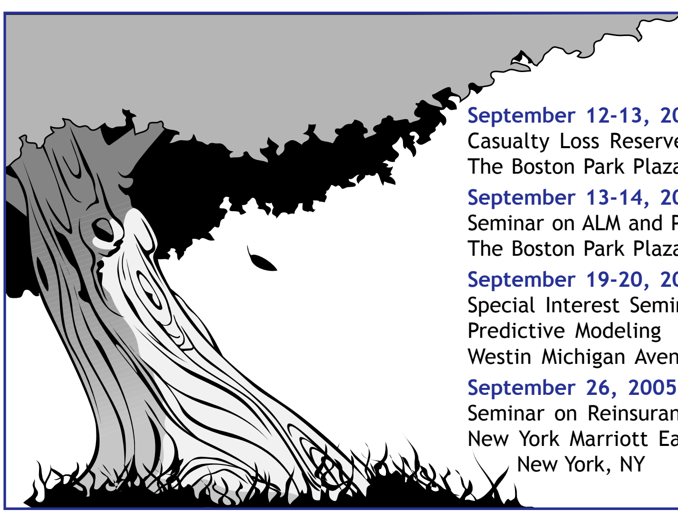
In 1990 the couple were national champions. Their performance was based on several qualifying events at which they accumulated points for their finishing position. There is a limit to the number of events a team can use for competition. At the end of the year everyone's points are totaled and the highest number wins. The prize was a medal, a plaque, and embroidered silk racing jackets. They were also listed in the national book of all rally winners.

Road rallies have given the couple many memories. On one rally in New York state, John and Janice managed to get lost three times on the odometer check. Janice once had a rally partner who claimed that if you got lost on the odometer check—the first part of the rally where you get to compare your mileage with the car that measured the course—you would win the rally. That part of the course is trap free and very straightforward. It's pretty hard to get lost.

The first time they were lost they said they'd win; the second time, they began to doubt their chances. By the third time, they were merely hoping to limp through the course. All in all, it was a fairly bad day. Instead of going to the rally festivities at the end of the event, they went out to dinner with a relative. When they returned to their hotel, their daughter Kristin told them that they were the rally winners. It seemed that several legs of the rally were eliminated because of various protests, and when the final results were tallied, they indeed had won. They still laugh about the unexpected win.

And so, John Stenmark has put his actuarial acumen to work in an exciting and challenging pursuit. When not racing, John Stenmark is the vice president-actuary for Southern Farm Bureau Casualty Insurance Company. Janice Stenmark is a retired mental health professional, heavily involved in volunteer work.



## CAS Professional Education Calendar

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

**September 12-13, 2005**
Casualty Loss Reserve Seminar
The Boston Park Plaza Hotel, Boston, MA

**September 13-14, 2005**
Seminar on ALM and Principles of Finance*
The Boston Park Plaza Hotel, Boston, MA

**September 19-20, 2005**
Special Interest Seminar on Predictive Modeling
Westin Michigan Avenue, Chicago, IL

**September 26, 2005**
Seminar on Reinsurance*
New York Marriott East Side, New York, NY

**November 4-20, 2005**
CAS Online Course: Financial Risk Management: Securitization
CAS Web Site

**November 13-16, 2005**
Annual Meeting
Renaissance Harborplace Hotel, Baltimore, MD

**March 13-14, 2006**
Seminar on Ratemaking
Marriott Salt Lake City Downtown, Salt Lake City, UT

**March 23-24, 2006**
Leadership Meeting
Philadelphia, PA, TBD

* Limited Attendance.

# CAS Publications to Undergo Changes

**By Curtis Gary Dean, Chairperson, CAS Publications Implementation Task Force**

CAS volunteers and staff are working to update our publications to meets the needs of an expanding casualty actuarial profession. The current process started when the CAS Executive Council agreed that a task force would be formed to develop a set of goals for call paper programs and publications that support and align with the strategic goals of the CAS.

The Task Force's report and recommendations were accepted by the Board of Directors at their May 2005 meeting. The complete report can be found on the CAS Web Site (www.casact.org). The report is the culmination of years of work gathering information and ideas from multiple sources and then crafting recommendations. The first half of the Centennial Goal was an important driver of the recommendations: "The CAS will be globally recognized as the preeminent resource in educating casualty actuaries and conducting research in casualty actuarial science."

The *Proceedings* will no longer be the vehicle for publishing peer-reviewed papers. Instead, a soft-cover semiannual journal will take its place. One name being considered for the new journal is the *Journal of Casualty Actuarial Science*, but the implementation task force is still considering naming options. The focus of the journal will continue to be high-quality applied casualty actuarial science. Feedback from the membership indicates that the applied nature of our publications is highly valued. Although a practical focus will be maintained, publication of significant theoretical research will also be encouraged.

A soft-cover semiannual journal will get important papers in front of property-casualty actuaries faster. Actuaries and academics worldwide will be encouraged to publish in the journal and CAS membership will not be a requirement for submitting papers. The CAS plans to advertise the new journal worldwide.

The *Proceedings* will continue with CAS specifics such as executive council and board of director lists, addresses to new members, presidential addresses, minutes of meetings, financial reports, pictures of new members, and obituaries. The contents of the *Yearbook*, minus the membership directory, will be moved to the *Proceedings*. A yearly hard copy Membership Directory will be available to members who request it though we expect that many members will opt to use the more up-to-date online directory.

The *Forum* will undergo a name change to become *The Forum: A Clearinghouse for Expressing Ideas and Stimulating Discussion*. This new title more clearly describes the purpose of the publication. It is a non-peer-reviewed clearinghouse for the casualty actuarial community and an open forum for discussion of ideas without the approval or review of the CAS. The eForum Task Force is looking for even more efficient ways to rapidly share new ideas using the Internet as the medium. They are charged with creating an online repository of working papers (non-peer reviewed articles) and models to allow members to expose their new research ideas and receive feedback from the online community.

A formal process will be created to publish monographs. These could be collections of study notes, call papers of particularly high quality and focused on one topic, or other specialized editions. One set of monographs being considered would include volumes of basic educational materials, all located in one, easy-to-access, format.

To help manage the publications process a staff editor of publications will be hired. This will provide more professional assistance to authors and volunteers on the editorial board.

When will the first issue of the new journal hit the newsstands? There is plenty of development work to be done, but late 2006 or early 2007 are ambitious target dates that the implementation task force is considering.

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"You've heard it said time and again that children are our future," said Rimbey. "In these days of federal education legislation and high-stakes testing, it is vital that we be sure our students are prepared for more than just the test. . . . we need to prepare them for the future. They deserve nothing less."

The Casualty Actuarial Society, along with the Academy, ASPPA, CCA and the SOA support the Actuarial Foundation. The Actuarial Foundation, the only independent philanthropic organization of the actuarial profession, relies on the financial support of individuals and corporations for the sustainability and growth of programs that help students with their problem-solving skills, aid consumers to understand some of today's most pressing financial issues, and support research projects, scholarships and activities that will ultimately bring greater actuarial benefits to society as a whole. As a supporting organization, the CAS encourages its members to personally support the work of the Foundation.

To view programs and initiatives of the Foundation or to make a contribution, visit www.ActuarialFoundation.org or call the Foundation office for more information at (847) 706-3535.

# New Textbook Unveiled at CAS Spring Meeting

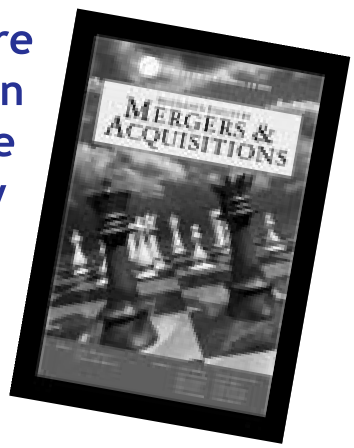
## *Insurance Industry Mergers and Acquisitions* Available From SOA

**By Alan Hines**

I was gratified to be a panelist on the 2005 CAS Spring Meeting general session, "Insurance Industry Mergers and Acquisitions," and speak on the collaborative research effort, sponsored by the Society of Actuaries, to publish a textbook on this topic. The session panelists consisted of textbook contributors who shared their first-hand experiences of the critical roles actuaries assume throughout all phases of the M&A transaction.

Jim Toole, FSA, director of the life and health practice of MBA Actuaries Inc. and co-editor of the textbook, provided highlights of the two-year effort. "The impetus for the project was to eliminate the gaps in the actuarial syllabi on this very important topic and to enhance communications between the various professions involved in a transaction," Toole explained.

A unique added-value feature of the book is the collection of over 50 real-life anecdotes contributed by practitioners (affectionately known as "tales from the crypt") illustrating aspects of the text.




Two editors and ten authors contributed to the textbook. The authors included actuaries with specialties in life, health, employee benefits, and property and casualty disciplines—each with extensive M&A experience. The actuaries worked very closely with authors from other professions, including an investment banker, two CPAs, a lawyer, and a tax expert, with the goal to develop a resource for all phases of the acquisition from pre-marketing through closing and post-deal integration. Toole noted that there were more than 100 contributors to this effort, including individual writers, peer reviewers, and proofreaders. A unique added-value feature of the book is the collection of over 50 real-life anecdotes contributed by practitioners (affectionately known as "tales from the crypt") illustrating aspects of the text.

John Butler, senior vice president of Houlihan Lokey Howard and Zukin, an international investment banking firm, offered his view of the capital markets and the prospect for increased M&A activity for P&C insurance companies. "Recent underwriting results and the prospect of higher interest rates will create excess capital for P&C insurers. The capital markets will not reward companies who dividend their excess capital and there are only limited growth opportunities in the global insurance market," said Butler. "Therefore, we expect to see an increase in M&A activity in the P&C insurance industry during the next three to five years as these companies attempt to maintain their high returns."

Those attending the session were treated to the view of actuaries from an investment banker's eyes. Butler explained that the investment banker is involved in all aspects of the transaction. He gave an overview of the M&A process and how actuaries contribute during each phase. When a company is considering going to market, the investment banker should be the first person contacted, because the initial presentation is critical to a successful deal. "When we represent the seller, one of the more challenging aspects of the engagement is working with the actuaries," said Butler. "The actuaries tend to be the ones who know the most about the company being sold." Butler added that actuaries usually enjoy talking about their work. "We work closely with the actuaries to ensure that the company's trade secrets are not disclosed during the due

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STEPHEN W. PHILBRICK

# The Cycle

The cycle is well known in property-casualty insurance. At first blush, it is hard to understand why it should occur. If companies estimate the expected loss for a contract, then add expenses and required return on capital, the observed loss ratios conceptually should randomly depart from the expected mean. This is decidedly not the case, as industry loss ratios tend to remain above or below the long-term average for several years at a time.

Parameter risk can explain this partially. If we think in terms of coin tosses, we can analogize the pricing process as estimating the results of coin tosses for each contract, where the underlying probability of heads is not known. If the probability of heads is higher (or lower) than one-half for all coins, the aggregate estimates will have errors tending in the same direction, until there is enough experience to estimate the true probability. Even if the true underlying probability is a moving target (to mix metaphors), it either is moving in a random way, in which we would expect to see more randomness in the resulting loss ratios, or it is moving in a systematic way, in which case we would expect people to figure it out, and the resulting loss ratios would also become more random.

Shocks to the system, such as unanticipated trend or changes in the legal climate, can explain why results might cluster on one side or the other for a short period of time, but these reasons seem inadequate to explain the multiyear length of the cycle. While it is tempting to point out the inherent unpredictability of losses in advance, projecting aggregate losses at the industry level is remarkably accurate. Anomalies, such as asbestos and D&O (due to securities lawsuits), exist, but aggregate casualty estimates are fairly stable.

If the industry can estimate, within a reasonable range, the losses for an upcoming year, how is it that the industry, as a whole, manages to get the pricing wrong? One possibility is that each company can estimate the total, but convinces itself that it has a smaller share of the total than it actually has. This could be because they convince themselves that they have superior underwriting, or perhaps they simply don't estimate what share they should have. The first possibility is sometimes called the Lake Wobegon effect—where all the companies view themselves as better than average. I will refer to the second as the market share effect—when a company has a larger (or smaller) share of the total market than it realizes.

One's first reaction might be that calculating market share is straightforward: divide your premiums by the industry total. I don't know that anyone has tried to compile these estimates and compare to actual, but I would expect it would come close. What I suggest is that market share should be measured by underlying exposures, some measure correlated with loss expectations, rather than premium.

**While it is tempting to point out the inherent unpredictability of losses in advance, projecting aggregate losses at the industry level is remarkably accurate.**

This isn't a trivial exercise. In some cases, there are decent surrogates for exposure, for example, millions of truck miles (possibly by class of vehicle). In other cases, such as D&O coverage, people are still scratching their heads trying to determine a reasonable surrogate. In most cases, the exposure base will be the same as that used to rate the policy, but this doesn't have to be the case. For example, suppose you use a proprietary credit score algorithm in your pricing but don't have any way of applying that approach at the industry level. You might use one

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exposure measure for pricing and another for the estimate of exposure market share.

The results might be enlightening. Suppose a company calculates that its share of the industry exposures is going up by five percent, and the industry expects a five percent increase in overall losses for the line of business. Management might be able to persuade itself that certain pieces of new business may be better than average (after reminding itself that every piece of new business is someone else's re-underwriting of the book), but management may find it difficult to believe that its entire book of business is somehow ten percent better than the year before. In theory, this is no different than observing that your premium estimates are flat and knowing that you have added more business than you've lost, but the quantification of an exposure measure might prompt you to confront the issue as well as giving you a way to start looking at it.

I don't wish to pretend that failure to measure exposures is the answer to the existence of the cycle. It has many causes, several of which have been documented. However, it is my impression that, as an industry, we haven't worked hard at compiling aggregate exposures, and this may be another contributor to the cycle.

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capital markets. A preliminary feasibility review found no apparent evidence, and the research project was tabled—for now, anyway. I believe this research effort was merely premature, since looking to the capital markets for evidence of ERM value merely shifts the recognition burden to the capital markets. This presupposes that capital market analysts are already to the point where they can (a) understand ERM programs, (b) quantify their value, and (c) justify pricing companies with ERM programs at a premium. A tall order, given the state of the science which we are hoping to help build!

Similar conclusions were drawn by the writing team behind the SOA's new textbook "Insurance Industry Mergers and Acquisitions." (See http://www.soa.org/ccm/content/research-publications/bookstore/books/books-new-titles/). [See story p.28.] The authors found that: valuations are not as scientific as we would like; the perceived value of actuarial involvement in M&A should be elevated; more typical capital market M&A metrics (e.g., earnings multiples, betas) play a large role in insurer valuations; and many hidden costs of integration (i.e., operational risks!) don't get factored into the decision. The bottom line: until M&A uses ERM as a core part of due diligence, the presence or absence of ERM may not drive value decisions. Instead, any apparent ERM value may initially be asymmetric – tempering downsides, bad things not happening, granting the benefit of the doubt in crisis. ERM may be first perceived as a necessity whose absence leads to a price discount, before it is viewed as a strategic advantage whose presence means a price premium.

25 Years Ago in *The Actuarial Review*

# Beard Count

**By Walter C. Wright**

*I have hunch that the percentage of beards has probably gone up in 25 years. Maybe an interested member will count them at the next meeting?*

## The May Meeting—Reflections

The number of beads at our meetings is increasing at a startling rate. Among the male members, that is. In San Juan, at one of the full sessions, a curious actuary took the trouble to count. Of the men present, 12.8% were sporting beards (moustaches were not counted). It may be significant that on the non-smoking side of the room the percentage was 17.9; on the smoking side, 6.9. Fire hazard? It may be additionally significant that there was a higher percentage of beards among members who arrived late for the session than among those who were there on time.

M.R. [Matthew Rodermund]

Mergers and Acquisitions Book
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diligence and ensure that any inherent risks are presented in the appropriate context," said Butler.

I served as the CAS representative on the author group. During the session, I noted the differences between the roles of the life and P&C actuaries for insurance company valuations. For life companies, the actuarial appraisal is a key component in determining the purchase price, but for P&C companies an actuarial appraisal is not a staple among the material included in the data room. The CAS literature has excellent papers on insurance company valuation, yet many buyers are still relying on market multiple approaches to determine bid prices. I ventured to say that actuarial valuation models for P&C companies would gain wider acceptance as the new SFAS 141 accounting requirements for business combinations, which require companies to determine the value of renewals and other intangible assets, are put into place. I also noted that since investment bankers and others are relying on market multiples, it is imperative that the casualty actuary's reserve analysis consider quality of earnings adjustments related to changes in reserve adequacy and unusual claim activity.

The SOA textbook project was an excellent process for enhancing actuarial research. It challenges the CAS leadership to look for opportunities to sponsor a similar effort. I had always thought of myself as having a diverse background and broad perspective on all aspects of the deal. However, when we had our first meeting with the authors from the other disciplines, I quickly realized how focused my contributions have been. This project has tremendously expanded my understanding of the entire deal.

I would like to thank Wayne Blackburn, Gail Ross, Joy Schwartzmann, Christopher Walker, and the CAS Office for their help on the M&A textbook project.

The handouts from the Spring Meeting general session can be found on the CAS Web Site at www.casact.org/coneduc/spring/2005/handouts/. Information on *Insurance Industry Mergers & Acquisitions* can be found at www.casact.org/pubs/iima.htm.

*Alan Hines, FCAS, is a director with PricewaterhouseCoopers LLP in Boston.*

## 2005 *Yearbook* Omission

Long-time Fellow Brian Mac Mahon was accidentally omitted from the 2005 *Yearbook*. The Yearbook staff regrets the error. His information is as follows:

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## CAS International Calendar

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

**Sep 4-7**
2005 ASTIN Colloquium
Swiss Federal Institute of Technology, Zurich, Switzerland

**Sep 6-9**
2005 AFIR Colloquium
Swiss Federal Institute of Technology, Zurich, Switzerland

**Sep 22-23**
Appointed Actuary Seminar
Hilton Montréal Bonaventure Hotel, Montréal, QC, Canada

## The CAS Board Meeting

Sunday, November 13, 2005

*You are Cordially*

*Invited*

CAS President Stephen P. D'Arcy invites all CAS members to attend the next meeting of the CAS Board of Directors. The meeting takes place before the CAS Annual Meeting on Sunday, November 13, in Baltimore, Maryland.

CAS members will be able to observe the meeting and may be called on to give their opinions. To sign up to observe the board meeting, please e-mail meetings@casact.org.

# Highest Probability?

Tom Struppeck suggested the following puzzlement. You have a standard 52-card deck of cards. You flip cards until an ace appears. What is the probability that the next card is the ace of spades? (Deuce of clubs?).

## Guess the Rule

You were asked to guess the rule for deriving numbers from pairs of numbers. One rule that almost worked was to take the difference of the two numbers, but that failed in one case. The rule that always works is to add the digits of the two numbers, which gives 12 for the missing number.

We had such a great number of correct responses to this puzzle that space only permits us to print a partial list of solvers. For the entire list, see the Web version of the *AR*. The first 20 solvers, in alphabetical order, are Karen Ayres, Robert Ballmer, Rachel Berkowitz, Boni Caldeira, Matt Crotts, Richard Davey, Steve Gentle, David Grimm, Bobby Hancock, Tim Huffman, Lisa Hyde, Joseph Izzo, Rob Kahn, Lawrence Katz, Christopher Mosbo, John Nauss, Jeremy Schall, David Uhland, Pete Vita, and Owen Zhang. Thanks to all who responded.

## Solution to "Card Trick"

As a followup to the recent card trick problem, Tom Struppeck sent the following:

## In Memoriam

J. Gary LaRose (FCAS 1981)
April 11, 2005

Fitch Cheney could have done a bit better, literally. Recently, a fabulous card trick was described in this column. That trick, attributed to Fitch Cheney, works as follows: an audience member deals five cards from a standard deck. Magician A takes four of the cards, arranges them, and hands them to Magician B. Magician B examines the four cards and then names the fifth card that the audience member still holds. Amazing!

One way of performing the trick was described in the last issue. There are 24 distinct orderings for the four cards given to Magician B and there are five distinct cards that the audience member can be left with, so in principle there are 120 (= 24 x 5) possible messages that can be sent. Since there are only 48 missing cards (Magician B sees four cards out of 52), there is room for an extra "bit" of information (either a "0" or a "1") to be sent, as that would require 96 (= 48 x 2) messages. In particular, the audience member could flip a coin that Magician A sees and Magician B could not only name the remaining card but also tell if the coin was "heads" or "tails."

While there is room in principle, it is not at all obvious that it can actually be done. As it happens, Michael Kleber had previously solved this problem in full generality ("The Best Card Trick," *Mathematical Intelligencer*, vol. 24, no. 1, Winter 2002, available at http://people.brandeis.edu/~kleber/Papers/card.pdf). It turns out that the upper bound can always be achieved. One of his proofs is quite elegant, using the Birkoff-von Neumann theorem from linear algebra and the Hall Marriage theorem from combinatorics (and a 225,150,024 x 225,150,024 matrix.) He gives a workable method for the enhanced trick, i.e., one that does not require the performers to consult a table or memorize an inordinate amount of information.

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