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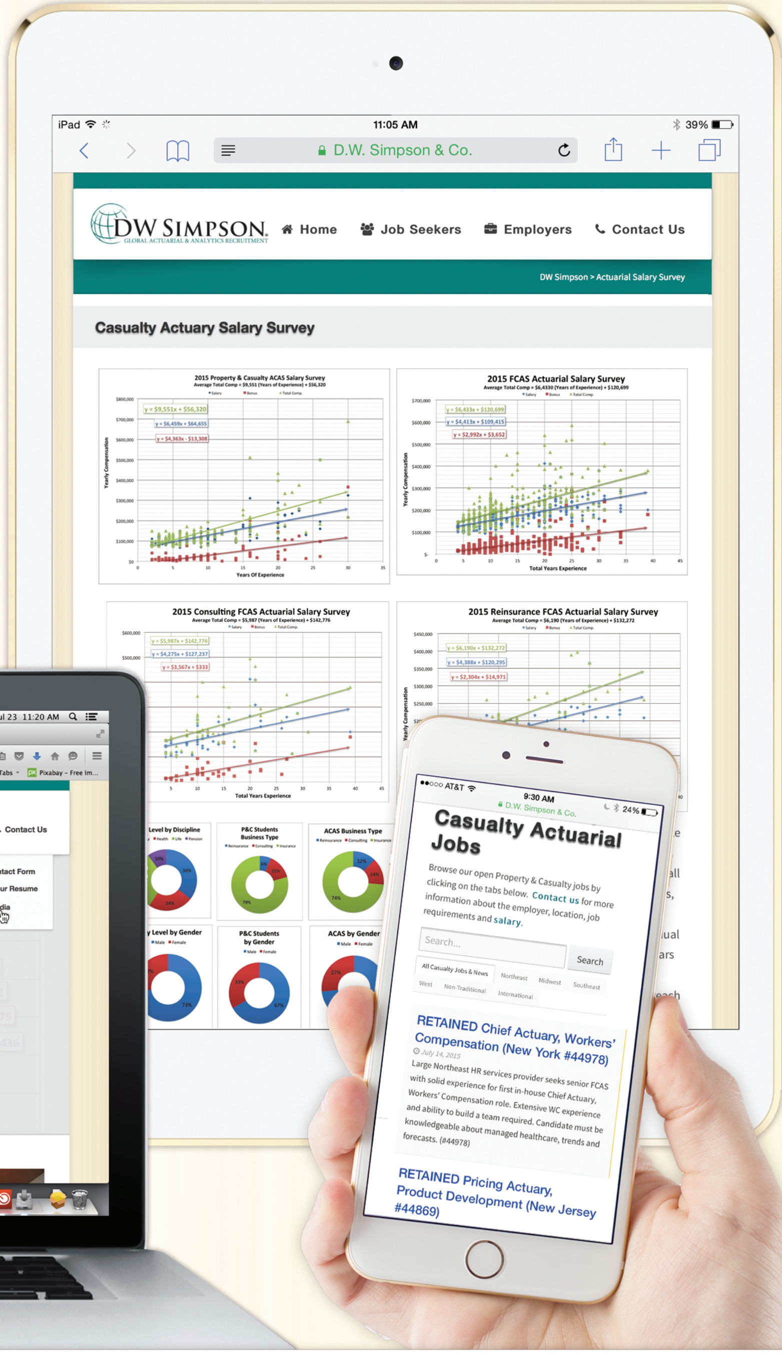

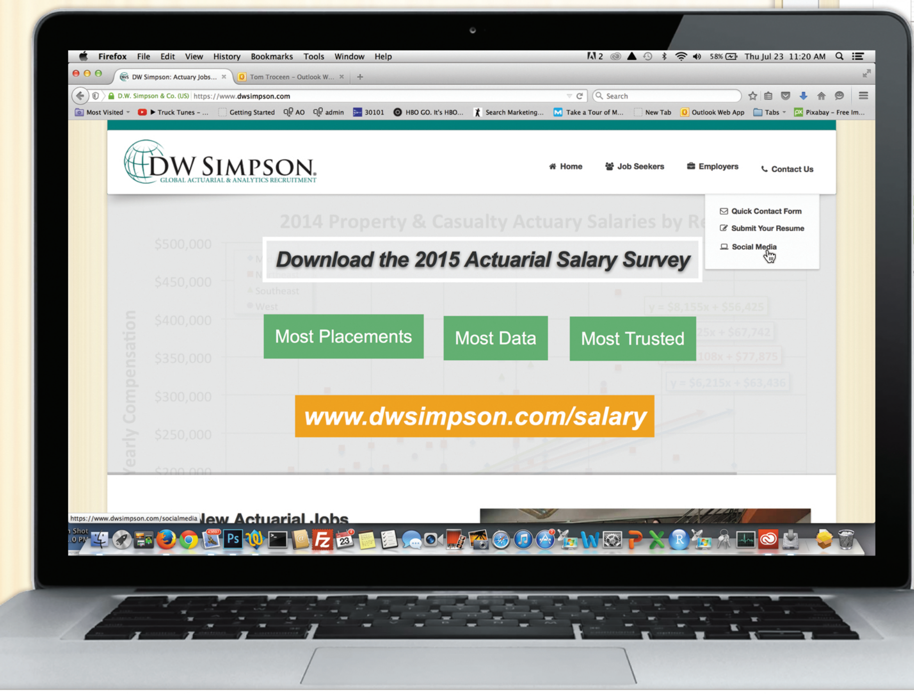

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editor's NOTE By GROVER EDIE

Mixing it Up

This issue features an interesting mix of pieces that address our ever-evolving world of insurance. From stochastic loss reserves to price optimization to dinner, this *AR* should appeal to just about everyone.

Our cover article, "The Mad World of Political Risk Insurance," recognizes our Society's global interests and presence as Steven Sullivan explores this little-known but very important line of insurance coverage. For a topic of more local interest, Annmarie Geddes Baribeau covers the latest matters involving price optimization in "Descending Confusion."

Are you attending the CAS Annual Meeting in November? If you were a CAS member when the NAIC first required an actuarial opinion on the loss reserves, then you are eligible to attend the Seasoned Actuaries Dinner at the Annual Meeting. Staying at home in November? The CAS offers a new online course on statistics for reserve variability to keep you occupied and help you earn those needed continuing education hours. Because "being the best doesn't guarantee survival" and "the best ideas don't always get implmented," you shouldn't miss the featured address by Jonah Berger at the CAS Annual Meeting. It will be webcast live only, so mark your calendars. See the CAS website for details.

Reinsurers and how their markets are changing are the subjects of two articles in Professional Insight. Also, at the center of the President's Message, Bob Miccolis challenges CAS members to think about how a brand-new startup would gain traction in our marketplace. I have been thinking about this question since I read the article.

Last but certainly not least, kudos are in order. Read how the CAS has been recognized for exemplary marketing and communications programs. Good for us!

Correction

The Explorations column, "Dependencies in Stochastic Loss Reserve Models," (*Actuarial Review* July-August 2015) contains two errors. The mean for Figure 1 (Group Code 353) should be -0.206, not 0.206, and Figure 1 shows 0.01 on the x axis rather than 0.1. *AR* regrets the errors.

Actuarial Review always welcomes story ideas from our readers. Please specify which department you intend for your item: Member News, Solve This, Professional Insight, Actuarial Expertise, etc.

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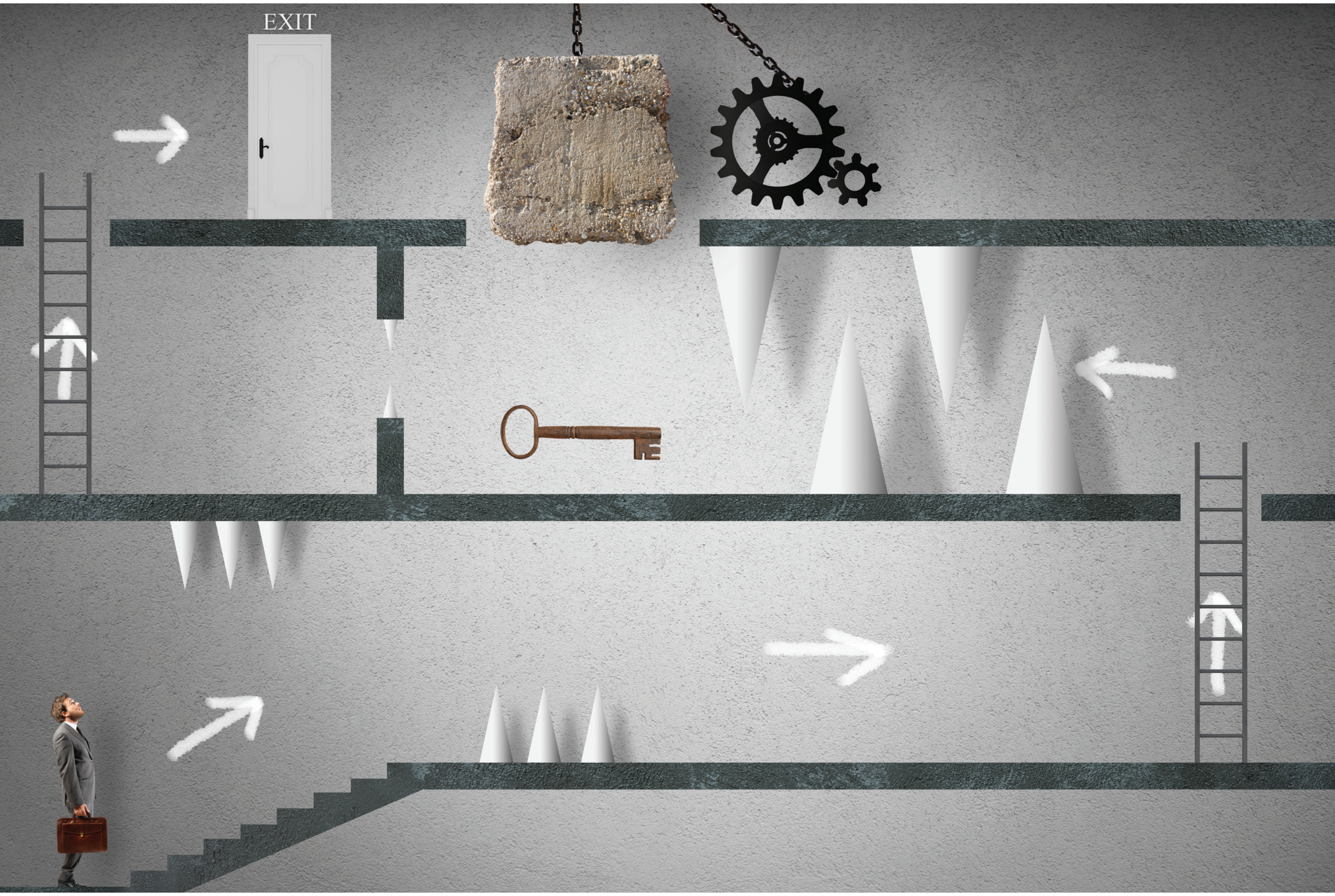

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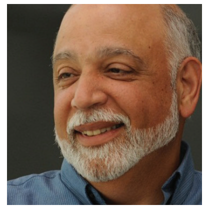

Charting a New Course

The flow of the river of opportunity does not always follow the same course as it has in the past. Currents change, and rapids can either push you ahead or swamp you. In contrast, the lakes of comfort seldom flow at all, and the course of opportunity is dictated by the winds and the power of your vessel.

Should we stay on our lakes of comfort and familiarity or venture onto the rivers that flow to the ocean? The journey on the rivers of opportunity will not be easy. It will present new challenges and require new skills. Fortunately, we have a number of colleagues who have already traveled some of those waterways.

Why Chart a New Course Now?

Actuaries are well respected by many insurance business leaders around the world. However, we are now hearing from several business leaders that actuaries are seen as lagging behind in learning and adapting to the emerging skill sets in analytics and data science. These skill sets are becoming increasingly important to many business decisions. Some believe that insurance analytics talent requires expertise beyond actuarial training, a belief driven by business executives who have successfully engaged experts in statistics, economics, and behavioral and data science to provide valuable insights for business decisions. The message from industry business leaders seems clear: They recognize and value specialists able to work on multidisciplinary technical teams.

However, merging expertise within a team of diverse specialists is not part of a typical career path for actuaries. For some actuaries, their actuarial qualification is the defining boundary of their expertise. That view, though, can be a challenge for the growth and influence of our profession. Our influence depends not only on what can be included within the bounds of our education, but also on our training in how to combine our expertise with that of other specialists.

We have proven our value in specific industry functions where our skills have been long established — insurance, self-insurance and risk management programs — but we have had limited recognition for our skills and training beyond these traditional realms. While data science and analytics have exploded in popularity and are driving innovation, they have also clearly disrupted some of our traditional areas of practice. But this disruption now presents unique opportunities for our profession — and some threats.

Our enthusiasm for being the gold standard in our field should also drive us to chart a new course aimed at expanding our boundaries.

What If We Stay the Current Course?

Adopting new technical skills is not revolutionary, but the normal process of such change is slow and incremental. Actuarial practice is currently viewed by many insurance executives as having entrenched concepts and methods that can be major obstacles compared to the rapid development of other professional education for specialists in analytics, data science and behavioral economics. At a seminar on insurance analytics a few months ago, Mike Angelina, ACAS, MAAA, CERA, asked a presenter, "Why aren't insurance executives going to their actuaries for insurance analytics?" The presenter responded that the actuarial profession may not be completely out of the picture, but it has a lot of catching up to do.

While the actuarial profession evaluates, debates and develops the changes to our actuarial education process, others are taking those opportunities and bypassing our profession.

Should the CAS take the route less traveled by other actuarial organizations? This course is bound to have currents, rapids, obstacles and other challenges not previously encountered. The CAS will need our members to lead and support the efforts to broaden and adapt the skill sets of actuaries and encourage others with complementary skills to join our journey. Meeting the needs of business leaders is our ambition; it is those business needs that are signaling a change in course.

We see a growing proliferation of analytics courses, university certificate programs, analytics software certifications and post graduate degrees being offered. Actuaries, both those credentialed and those still taking our exams, are increasingly attracted to such programs. While the actuarial profession evaluates, debates and develops

President's Message, page 8

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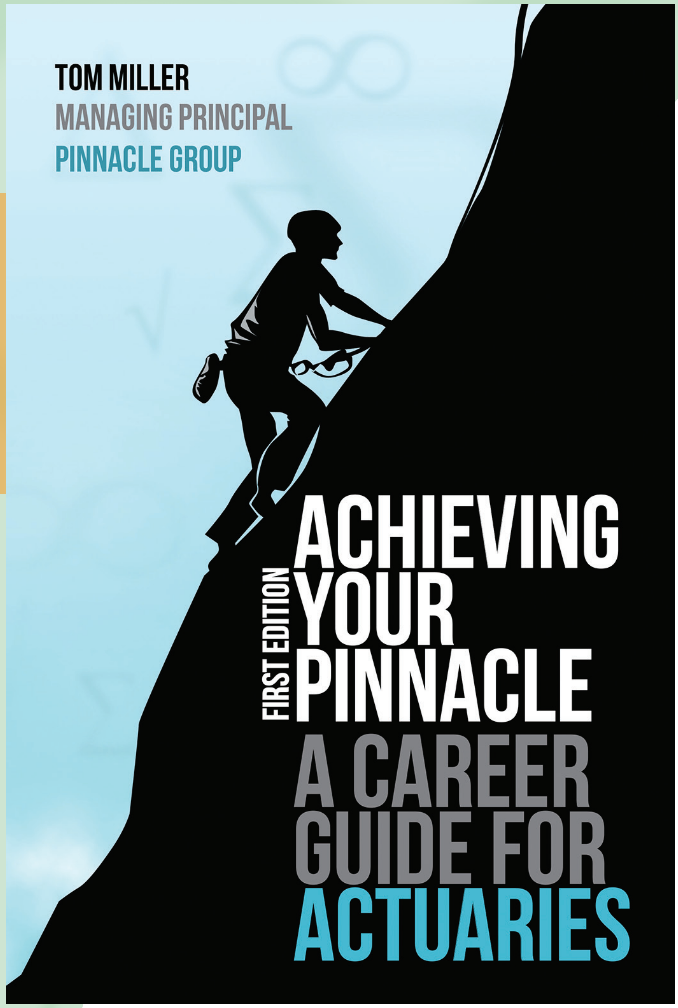

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President's Message

from page 6

the changes to our actuarial education process, others are taking those opportunities and bypassing our profession.

Do we want to be valued only for those skills that our actuarial exams cover? Will business leaders be convinced that the actuarial domain is flexible enough to adapt to the insights of behavioral economics and predictive analytics? Are actuarial education and practice flexible and adaptable enough to create credible experts in the application of these concepts and methods?

The challenge we face as a profession is how to respond to this expansion of talent in analytics and data science and still expand the value of the skills that our credentials represent. More importantly, how can we turn this challenge into an opportunity? For example, what can we learn from our experiences in developing the CERA credential, from the new Certified Actuarial Analyst credential developed by the U.K.'s Institute and Faculty of Actuaries, and from the ASPPA pension actuaries who have joined up with other employee benefit and retirement plan professionals?

There are many CAS members and candidates whose practical skills are quite valuable to the analytics needs of many of our employers; many job listings are posted looking for a combination of actuarial and analytics skills. However, adding to the overall educational load for actuarial qualifications would certainly slow our progress through or around the rapids or may cause us to throw overboard many important topics from our actuarial curriculum.

Scouting out the New Course

"The best of the best are always focused on reinventing," was the innovation message delivered by Josh Linkner, CEO and managing partner of Detroit Venture Partners, at a recent convention of the American Society of Association Executives. One of Linkner's five "obsessions" of innovative thinkers is envisioning how a brand-new startup would try to gain traction in your market. Another obsession of innovators is pushing their boundaries — genuine disruption comes from more than incremental change, according to Linkner. So scouting out our new course will focus on how we can reinvent ourselves and where we should look to push our boundaries.

Innovation and reinvention can provide us with a fresh approach to these new threats and opportunities. This approach will take a commitment to break away from our conventional educational pathway and attract those who bring the new skills.

As I mentioned in my President's Message in the last issue of *AR*, this is time to build upon our current alliances, form new ones and expand our sphere of influence. Our vision must be clear: "Be a world-class collaborator, especially beyond our traditional actuarial boundaries." We must embrace these new business demands and enable actuaries to be a part of a multidisciplinary approach to professional education.

In fact, we have already begun to explore what such educational pathways might look like — pathways for more integration of those with actuarial skills with those from other disciplines. We are also seeking established organizations with mutually beneficial goals who are interested in forming strategic alliances to help us navigate our new course and accelerate our progress.

Our new course should include options for alternative professional career paths — including a pathway for those who wish to follow a similar direction of many actuaries, as well as alternate routes for those who are looking for a focus on specialized areas where analytics, data science and other quantitative skills can be combined with actuarial skills. The design of alternative pathways should also include the achievement of professional education and competency to recognize a specialist's expertise.

Preparing for the New Course

The CAS already has the basic infrastructure to offer our credentials, continuing professional education and professionalism. Through that infrastructure, we can expand our operating model and address the current and future business needs important to our members and the organizations they serve. The new course will also enable us to enter much larger territories where qualified professional specialists in analytics are needed and where many actuaries are very interested in staking claims.

Now is the time to chart a new course for the CAS and our profession. The CAS leadership has been very busy this year working on such a new course, laying a foundation to take us from an exclusive club of actuaries to a more inclusive and diverse professional organization. Extensive preparations are being made for our expedition. The journey should be an exciting one. So get ready to pack your gear for a ride down the river.

The details of our plans are still under development. To be continued....

Dear Editor:

Having recently dealt with my first cyber loss case, I read the article on cyber insurance with great interest ("Cyber Insurance: The Actuarial Conundrum," *AR*, July-August 2015). I find it interesting that cyber loss is usually listed as cyber liability but is covered mainly by property excess policies. We have chosen to include these losses with liability coverages and not property coverages as we collect data. Is there a consensus on this?

Ellen Pierce, FCAS

Author Annmarie Geddes Baribeau responds:

Since cyber insurance is evolving, there are several different products that springboard from different lines. From buyers to agents, the market is confusing on a lot of levels and policy standardization is just beginning to take place. If you are interested in learning more, check out the most recent Betterley Report on cyber insurance, which explores extensively each product type and what it covers.

ACTUARIAL REVIEW *LETTERS POLICIES*

Letters to the editor may be sent to ar@casact.org or the CAS Office address. Include a telephone number with all letters. Actuarial Review reserves the right to edit all letters for length and clarity and cannot assure the publication of any letter. Please limit letters to 250 words. Under special circumstances, writers may request anonymity, but no letter will be printed if the author's identity is unknown to the editors. Announcement of events will not be printed.

COMINGS AND GOINGS

JLT Specialty Insurance Services Inc. has appointed **Chris Najim, Ph.D., FCAS, MAAA**, as senior vice president of analytics and consulting. Najim will assist clients in quantifying nontraditional risk exposures to gain a better understanding of potential gain and loss scenarios. Najim served as vice president and senior actuary at Swiss Reinsurance America Corporation, where he performed pricing analyses for regional and national treaty accounts across both property and casualty lines of business.

ICW Group Insurance Companies recently named **Danny Engell, FCAS, MAAA**, as vice president of enterprise strategic planning and analytics. Engell will be responsible for driving analytics and business intelligence to achieve competitive advantage across all business lines. Engell began his tenure with the company as an actuarial analyst in 2005 and has since held several leadership roles. He was previously vice president of workers' compensation underwriting, where he assisted in overseeing branch underwriting operations.

Andrew P. Kempen, FCAS, MAAA, has joined IFG Companies as senior vice president and chief pricing actuary. Kempen will serve as advisor to various business units, working with company underwriters, claim professionals, product development specialists and unit leaders to oversee rating/pricing decisions, underwriting analyses and performance assessments. Kempen began his career at Milliman as an actuarial analyst and has since held roles at General Electric, USAA and Argo Group International Holdings, Ltd.

Andrew Doll, FCAS, has joined Capital Insurance Group as the company's vice president and chief actuary. Doll began his career as an actuarial analyst for a Midwestern-based, national insurance company. He then joined a Wisconsin-based regional property and casualty insurance provider and was promoted from assistant vice president of specialty lines underwriting to vice president and chief actuary. Doll has since held executive management positions for national insurance carriers.

Westfield Insurance has hired **James Merz, FCAS, MAAA, CPCU**, to fill the new role of group actuarial and analytics leader. In this position, Merz will assume overall responsibility for the company's analytics resource center and the actuarial department. Merz joins Westfield from Hanover Insurance Group where he served as vice president and chief actuary. He has also held a series of actuarial positions at Nationwide Mutual Insurance Companies and Great American Insurance Company. Merz has served on the CAS Board and his work has been published in the CAS *E-Forum*.

Grover Edie, MBA, FCAS, CERA, CPCU, ARP, ARM, has joined Huggins Actuarial Services, Inc. as a consulting actuary. Edie is responsible for economic capital modeling, ERM, loss reserve and pricing analysis, improving business performance and related activities. He is past vice president and the chief actuary for Michigan Millers Mutual, GMAC, John Deere and Erie Insurance. He was also a consultant for KPMG and started his actuarial career at ISO. He is a frequent speaker at industry conferences and is editor in chief of *Actuarial Review*.

EMAIL "COMINGS AND GOINGS" ITEMS TO AR@CASACT.ORG.

IN REMEMBRANCE

Longer versions of these obituaries are posted on the CAS website at http://www.casact.org/pubs/proceed/index.cfm?fa=pastind.

A LIFE LIVED LARGE AND SMALL

Annette J. Goodreau (FCAS 1997)
1963-2014

Annette Goodreau's diverse career and life showed her ability to see the large and the small things that make life enjoyable. She ran a family-owned doll company, helped start up a global business and rescued numerous shelter dogs and cats.

Goodreau (CERA 2013) was chair of the CAS Program Planning Committee and, up until her illness, was a CAS Board Director. She was chief actuary at HCC Insurance Holdings, and group chief actuary and CRO for the start-up ANV (*Acta Non Verba*). The doll company managed by Goodreau and her sister, Paulette, were the subjects of an *AR* Nonactuarial Pursuits column in February 2007.

Up until just before the onset of her own sudden illness, Goodreau cared for her mother Eloise, who died in 2013. In addition to Paulette, she leaves behind her siblings, Mary, Girard, Edward and Anthony; her numerous friends from around the world; and her pets.

PROCEEDINGS EDITOR

Debbie Schwab (FCAS 1990)
1956-2013

Debbie Schwab of Delray Beach, Florida, earned a degree in mathematics from Fairleigh Dickinson University in Teaneck, New Jersey, in 1978 and was an actuary for 35 years, focusing on professional liability and health care.

Schwab was an exacting copy editor for *Proceedings of Casualty Actuarial Science* who served from 1992 to 2003, a particularly prolific time for actuarial scientific literature. She volunteered for other CAS committees, including the CAS Committee on Health Care Issues (2010-2013) and the Member Advisory Panel (2004-2013).

Schwab is survived by her mother, Ethelyn Schwab; her sister, Lori (Gerard) Johnson; her aunt, Madelyn Deane; and a niece and nephew. Her father, Arnold Schwab, predeceased her. Donations can be made in Schwab's memory to the American Cancer Society, 20 Mercer Street, Hackensack, New Jersey.

CAS LIBRARIAN

Richard A. Lino (FCAS 1956)
1926-2014

Richard Lino was born in Manhattan and grew up in the New Brighton neighborhood of Staten Island. He was a graduate of Curtis High School and New York University. He was an actuary with the Insurance Services Office in Manhattan for his entire career, retiring in 1987.

Lino was one of the few CAS members who served as a CAS elected officer for over ten years: He was elected as librarian and served for 12 years, from 1958 to 1969. The elder Lino's enthusiasm for his work influenced his son, Richard Lino Jr., to earn an FCAS and to volunteer for the CAS for several years.

In addition to his son, Richard, Lino is survived by his wife of 33 years, Joan; his sons, Ronald and Robert; daughters, Barbara Todd and Elisabeth Lynch; stepdaughters, Tracey Berkowitz, Deirdre Spankiewicz and Caroline Ruggeri; sister, Gilda Edelman; 14 grandchildren; and seven stepgrandchildren.

LOVE IN IOWA

Thomas William Fowler (FCAS 1955)
1920-2014

Far from where they both grew up, Thomas Fowler and Alice Fritts met and fell in love. He was a WWII veteran earning a BA at the University of Iowa, and she was a preacher's daughter in grad school there. The two married in 1949.

She worked for a short time as a dietician before staying home to raise their family in Ridgewood, New Jersey. He worked until his first retirement at Swiss Re Holding Corporation in New York, where he served as vice president and actuary. They later moved to rural Virginia, and he commuted to Baltimore for F&D, where he finally retired as actuarial consultant.

In 2000 the couple moved to Virginia Mennonite Retirement Community, where they enjoyed reading, walking, swimming and fellowship.

Fowler was preceded in death by Alice; a son, David; and a sister, Letitia Hile. Surviving are children, Thomas (Rosalie) Fowler, William Fowler, and Alice (Swarnjit) Deol; a grandson; a sister Ruth, E. Fowler; and two nieces.

A PRINCIPLED MAN

William A. Riddlesworth (FCAS 1963)
1936-2013

Bill Riddlesworth, an architect of one of the first CAS Statements of Principles, died at his home in Ellington, Connecticut, with his family by his side.

He was born and raised in Auburn, New York, and attended Cayuga

Community College there. He was a 1958 graduate of Colgate University and retired from Aetna Life Insurance Company in Hartford, Connecticut.

Riddlesworth was part of the CAS Committee on Loss Reserves from 1975 to 1977. He worked alongside CAS luminaries Hachemeister and Berquist to develop the "Statement of Principles Regarding Property and Casualty Loss and Loss Adjustment Expense Liabilities," which was published in May 1978.

Survivors include his wife, Julie Riddlesworth; children, William (Robin) Riddlesworth, Susan Lovejoy, Thomas (Linda) Riddlesworth and Robert (Pamela) Riddlesworth; brother, Arthur Riddlesworth; five grandchildren; a great grandson; and several nieces and nephews.

ACTUARIAL PIONEER

Ruth E. Salzmann (FCAS 1947)
1919-2014

Ruth E. Salzmann's plentiful career was one of firsts; her role as the first female president of the CAS (1978) also earned her the title of first female president of any North American actuarial organization. After graduating from University of Wisconsin at Madison, Salzmann began her career at Hardware Mutual Casualty Company as an actuarial research assistant. Salzmann spent the majority of her career at Sentry Insurance, where she was the company's first female officer and later the first female board member. She made numerous contributions to the field of actuarial science, including the development of the Salzmann curves and authorship of the 1963 paper "Rating by Layer of Insurance." Well-known for her sense of humor, she has been known to say, "Female actuaries don't die; they just lose their curves."

A DEBTOR TO HIS PROFESSION

Jerome "Jerry" A. Scheibl (FCAS 1966)
1930–2014

"I hold every man a debtor to his profession." — Francis Bacon

Jerry Scheibl was fond of Bacon's saying and took it to heart. He was dedicated to the CAS and the American Academy of Actuaries, serving as CAS president in 1980 and earning the Academy's Jarvis Farley Award for Outstanding Volunteer Service to the Actuarial Profession in 1992. Scheibl also served on the Actuarial Board for Counseling and Discipline from 1991 until 1997.

His commitment over the years garnered him not only awards, but keen insight into the profession. Past CAS President Dave Hartman recalls that Scheibl was one of the first to characterize the U.S. actuarial societies and the Academy as the "brains" and "mouth," respectively, of the U.S. actuarial profession.

Scheibl is survived by his sister, Jean Tiemeyer of Scottsdale, Arizona, and five nephews. His wife, Marlene, preceded him in death.

WHERE THE HEART IS HOME

Jeanne Demko Chiang (FCAS 1986)
1953-2014

Born in Manchester, Connecticut, Jeanne D. Chiang earned a bachelor's degree in mathematics from Wesleyan University, where she met her husband, Jaf Chiang. She worked as an actuary at Travelers Insurance in Hartford throughout her entire career. Mary Fleischli, a former coworker of Chiang's, described her as lovely person who was "gracious in the way she helped others at work; she did not make people feel silly for not knowing something or that they were wasting her time." A music lover, Chiang had season tickets to the Hartford Symphony and Broadway Series for several years. She loved to travel and had visited China, Hawaii, the Galapagos Islands and Africa. But she was most dedicated to her husband and her two children. Chiang is survived by her husband, daughter, Jasmine; son, Colby; and brother, Thomas Demko.

PLANTING TREES

Charles C. Hewitt (FCAS 1951)
1920-2014

Charlie Hewitt, CAS president (1972) and Academy vice-president (1977), challenged new members to think of future generations, stating: "Plant a tree under whose shade you will never sit." A renowned raconteur, Hewitt was also featured in the recent CAS Centennial Video discussing his encouragement of women entering the profession.

Born in Trenton, New Jersey, he graduated from Princeton University in 1940. During WWII he served as a weather officer in the U.S. Army Air Corps, rising to the rank of Captain and serving in Wilmington, North Carolina, and Shanghai, China.

Hewitt was employed by several insurance companies and retired in 1985 as president and CEO of Metropolitan Reinsurance Co., a company he helped found.

He was predeceased by his wife of 68 years, Mary Irene. He is survived by his brother, three children, five grandchildren and five great-grandchildren.

CAS staffers Alice Chambers, Tamar Gertner, Megan LaVine, Kate Niswander, Donna Royston, Elizabeth Smith, Sonja Uyenco and Cheri Widowski contributed to this column.

CALENDAR OF EVENTS

Interactive Online Courses
"Understanding CAS Discipline Wherever You Practice"
"Introduction to Predictive Modeling"
www.casact.org/education/interactive/

November 15-18, 2015
CAS Annual Meeting
Philadelphia Marriott Downtown
Philadelphia, PA

March 14-16, 2016
Ratemaking and Product Management (RPM) Seminar & Workshops
Disney's Yacht & Beach Club Resort
Orlando, FL

May 15-18, 2016
CAS Spring Meeting
Sheraton Seattle Hotel
Seattle, WA

June 6-7, 2016
Seminar on Reinsurance
Hyatt Regency Boston
Boston, MA

September 18-20, 2016
Casualty Loss Reserve Seminar (CLRS) & Workshops
Hyatt Regency O'Hare
Rosemont, IL

TWENTY-FIVE YEARS AGO IN THE *AR* BY WALTER WRIGHT

1990 marked a significant turning point in loss reserve opinions.

Actuarial Opinions on Loss Reserves Required in All States Starting in 1990

A most significant and positive action was taken at the June 1990 meeting of the National Assocation of Insurance Commisioners (NAIC). The NAIC adopted a requirement, applicable in all states, for an actuarial opinion on the loss reserves of all but the smallest companies effective with filings of the 1990 Annual Statements. This achieves a goal the casualty actuarial profession has been working towards for at least 15 years.

The NAIC Blanks Task Force suspended its rules in order to make this change effective for this year. The opening sentence of the revised Section 12 of the Annual Statement Instructions: Property and Casualty now reads:

> There is to be included or attached to Page 1 of the Annual Statement, the statement of a qualified actuary, entitled "Statement of Actuarial Opinion," setting forth his or her opinion relating to loss and loss adjustment reserves.

This sentence specifies an actuarial opinion, whereas previously the opinion was issued by a loss reserve specialist. The requirement now applies in all states, whereas previously it was a discretionary matter on a state by state basis. It also changes the due date from April 1 to March 1.

Join the Seasoned Actuaries for Dinner at the CAS Annual Meeting BY ANNE KELLY

Seasoned Actuaries is a Special Interest Section for CAS members who have been members for 25 years or more, or who are retired or thinking about retirement. Our dinners, held on Monday night at the Annual and Spring Meetings, are an enjoyable way to reconnect with old friends and to make new ones.

The Seasoned Actuaries Dinner, in concurrence with the 2015 CAS Annual Meeting in Philadelphia, will take place on the evening of November 16. A formal invite will be sent where you will find information on pricing and meal choices. If you have any questions, please contact Matt Caruso at mcaruso@casact.org.

We look forward to seeing you (and your guest) at the Seasoned Actuaries Dinner in Philadelphia!

Anne Kelly, FCAS, is senior associate for Risk & Regulatory Consulting, LLC. She currently serves as president of the CAS Seasoned Actuaries Section.

Academic Internships Merge Theory with Practice, Promote the Profession

BY MELISSA TOMITA, CHAIR OF THE CAS UNIVERSITY ENGAGEMENT COMMITTEE

The classic image of summer interns is one of anxious students wearing new business casual duds and learning the ropes of their first-time office job. They are eager to impress and land a job offer upon graduation. But there is another type of summer intern with different goals and motivations — the academic intern. Dr. Jelena Milovanovic is one such intern. As the actuarial science coordinator at Arizona State University, she spent this past summer at Scottsdale Insurance, Nationwide Mutual's Excess and Surplus/Specialty Lines Company in Scottsdale, Arizona, bridging the gap between the worlds of academia and industry.

"Practicing what you preach gives you credibility. After an internship, you can call up real-life examples in the classroom and students respect that," says Milovanovic, who worked on many projects over her eight-week internship, giving her a variety of practical experiences to share. She analyzed, presented and filed a rate indication, worked through a reserve review, and took on a predictive analytics project differentiating profitable versus unprofitable segments of business. These projects combined technical actuarial work, statistics, business relationships and general insurance knowledge.

Her work with predictive analytics even took her all the way to the Scottsdale Insurance's management liability office in New York to present her findings. "Working with the predictive analytics team not only showed me examples where theory meets the real world but also the creativity necessary to work around limitations in actual data."

Companies also benefit by hiring academic interns, because they offer theoretical and technical knowledge and are as independent and self sufficient. After a great experience, academic interns also become advocates to their students for the company and the P&C side of the actuarial field. Dr. Rick Gorvett, co-chair of the CAS academic working group, and director of the actuarial science program at the University of Illinois at Urbana-Champaign, supports this idea. "Providing an academic internship is a great way for a company to enhance the future of the profession," said Gorvette. "Even better, if the company and the CAS can enhance an academic's understanding of key issues and current research threads and inspire professors to add practical and relevant casualty actuarial topics to their research agendas, the future of our profession will look very bright indeed," he said.

For the professor or program director looking for an internship, Milovanovic recommends networking. "Start with the established actuarial networks such as the CAS Regional Affiliates or other local actuarial clubs and build from there," she said.

With 10-15 students in tow, Milovanovic attends every semiannual Casualty Actuaries of the Desert States meeting. She also invites representatives from each type of actuarial work to teach a class as part of her introductory actuarial course.

Ken Levine, vice president and chief

Dr. Jelena Milovanovic

actuary of Scottsdale Insurance, offers high praise to Arizona State for partnering with local companies to build the university's actuarial science degree program. Levine and other senior actuaries in the Valley of the Sun have been invited to serve on a university advisory board on classroom content. "Jelena's summer internship at Scottsdale Insurance strengthened ASU's connection with the profession and positioned her to better prepare her students for an actuarial career," said Levine. "Scottsdale Insurance feels especially fortunate to have benefited from her talent and contributions," he said. "It was definitely a 'win-win' experience!"

When asked if she would pursue another academic internship, Milovanovic answered "Yes" enthusiastically. "I need to evolve and stay current," said Milovanovic. "How are we going to prepare students for the industry if we never step into it ourselves?"

Melissa Tomita, FCAS, is an E&S actuary for Scottsdale Insurance Company in Scottsdale, Arizona.

CAS Introduces New Online Course Series on Statistics for Reserve Variability

BY NORA POTTER, CAS PROFESSIONAL EDUCATION COORDINATOR

The CAS is excited to introduce two new courses to its interactive online course library. The Statistics for Reserve Variability series will familiarize students with common probability distributions and statistics, as well as to the basics of generating random variables for simulation and bootstrapping. Interactive online courses are self-study training lessons that feature quizzes, case studies, Excel exercises and knowledge tests.

The first course, "Introduction to Statistics and Notation," is a primer on statistics and the methods used to model reserve variability. The second course, "Introduction to Modeling Statistics," teaches students common probability distributions and statistics as well as the basics of generating random variables for simulation and bootstrapping. Designed with the principles of adult learning, each course is targeted to an actuary or insurance professional with one or more years of experience. Courses are approximately 90 minutes long, not including extra reading and exercises, and conclude with an end-of-session test.

The Experts

Authors of the course, Louise Francis and Mark R. Shapland, are longtime CAS Fellows with vast experience in various aspects of reserve variability.

Francis is the consulting principal and founder of Francis Analytics and Actuarial Data Mining, Inc. where she leads reserving, pricing, predictive modeling, simulation, and related actuarial projects and engagements.

Shapland is a senior consultant with the Dubai office of Milliman and was previously the lead casualty actuary on the PCIS (software development) team. He joined the firm in 2003, after 24 years of experience at insurance companies and other consulting firms.

Anticipated Launch

The CAS plans to launch "Introduction to Statistics and Notation," by the end of summer 2015. "Introduction to Modeling Statistics" will soon follow in fall 2015.

For more information, please visit http://www.casact.org/education/interactive/index.cfm?fa=reserve_variability or email the author at npotter@casact.org.

CAS STAFF SPOTLIGHT

Vincent Edwards, Manager of Professional Education

Welcome to the CAS Staff Spotlight, an interview-style column featuring the CAS staff you interact with on a regular basis. Through the column, you will learn about staffs' roles supporting CAS constituents, their hobbies and what motivates them.

In this spotlight, we are proud to introduce you to Vincent Edwards.

- **What do you do at the CAS?**
  Crack whips, corral and "make things happen." My duties within the professional education department are to manage several projects and bring various creative ideas to fruition. Primarily, I liaise with the RPM Seminar, CLRS and Reinsurance Seminar planning committees. From the beginning until the end, I assist the committees with providing great educational content through exciting events for the membership every year. In addition, I assist with one of our newest professional education ventures, interactive online education courses. This exciting new product offers a new way for members to virtually obtain CE outside of our traditional ways.
- **What do you enjoy most about your job?**
  Every day is a new day, and I can expect the unexpected. I never quite know what I will get from one day to the next working with the various educational projects. Our staff does a good job here of anticipating and being ready to tackle the unknown and interesting situations that may come. It's a joy when members step out of their comfort zone and try something new. I like to push the envelope, when appropriate, and I think the membership benefits as a result when we are successful.
- **Hometown:**
  "There's no place like home! There's no place like home!" (Wichita, Kansas)
- **College and degree:**
  University of Kansas — Home of the Jayhawks! Bachelor's in journalism, news information; Master's in journalism, strategic communications.
- **First job out of college:**
  Academic Advisor at the University of Kansas College Access Program. I facilitated workshops, taught college prep courses, recruited and advised students, and chaired student leadership conferences.

Vincent Edwards

- **Describe yourself in three words:**
  Optimistic, balanced, "cool."
- **Favorite weekend activity:**
  An excursion or gathering where great food is involved.
- **Favorite travel destination:**
  At the moment: Las Vegas. There's good people watching, gambling, shows, food and energy. Too bad it's in the desert!
- **One interesting or fun fact about you:**
  I can play the trumpet. (Although I may be a little rusty these days.)

IN MEMORIAM

Jordan J. Pitz (FCAS 2001)
1972-2015

Haiyan "Heidi" Pan (FCAS 2010)
1973-2015

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TRAVELERS

CAS Implements New Diversity Strategy to Build a Multidimensional Property and Casualty Profession

BY KATE NISWANDER, CAS MARKETING AND COMMUNICATIONS MANAGER

As part of its commitment to advance the actuarial profession and engage future generations of property and casualty actuaries, the CAS has adopted a new strategy to enhance the diversity of its membership. Approved by the CAS Board of Directors in March, the CAS Diversity Strategy formalizes the CAS's commitment to facilitate the evolution of a multidimensional property and casualty actuarial profession. While the CAS has historically committed time and resources to support profession-wide efforts to encourage diversity and will continue to do so, the new strategy is focused specifically on the CAS and property and casualty actuaries.

The strategy calls for recruiting quality mathematical and analytical talent from groups currently underrepresented in the profession. The strategy is consistent with the CAS Strategic Plan, which focuses on increased diversity among CAS members across a range of factors, such as location, culture and country of origin. The CAS will actively work to attract and retain talent with a wide range of life experiences and professional capabilities. The new diversity strategy is a proactive step in furthering all of these goals.

"The CAS has always encouraged an inclusive community where unique perspectives are highly valued," said CAS President Bob Miccolis. "The challenges facing our members and their employers are increasingly multifaceted and multicultural in nature. Having a diverse membership allows the CAS to better understand these complexities and respond to the demands for casualty actuarial expertise."

The diversity strategy is intended to cut across all functional areas of the CAS and will be integrated into all of the organization's initiatives. The implementation of the strategy will be overseen by the newly formed CAS Diversity Committee, chaired by David Terné, FCAS.

"Given how quickly the property and casualty field is growing, the CAS is proud to recognize and embrace the need for a formal diversity strategy," said Roosevelt Mosley, CAS vice president-marketing and communications. "Signifying our commitment to this cause can only make the CAS a better and stronger organization in the years to come."

CAS members who are interested in joining the CAS Diversity Committee should contact Alice Chambers, marketing and communications coordinator, at achambers@casact.org.

CAS Recognized For Exemplary Marketing and Communications Programs

BY KATE NISWANDER, CAS MARKETING AND COMMUNICATIONS MANAGER

The Casualty Actuarial Society was honored for exemplary work done in 2014, garnering four coveted EXCEL Awards for marketing and communications projects involving the CAS Centennial Celebration, *Actuarial Review* magazine and CAS Student Central. The EXCEL Awards, hosted by Association Media & Publishing, recognize excellence in nonprofit association publishing, marketing and communications.

The highly competitive contest received over 850 entries, producing 218 winners across 75 categories. A group of 100 media and publishing professionals volunteered to judge the submissions, which included work from associations such as Habitat for Humanity International and the World Wildlife Fund. Winners were honored at the EXCEL Awards Gala on June 15 in Washington, D.C.

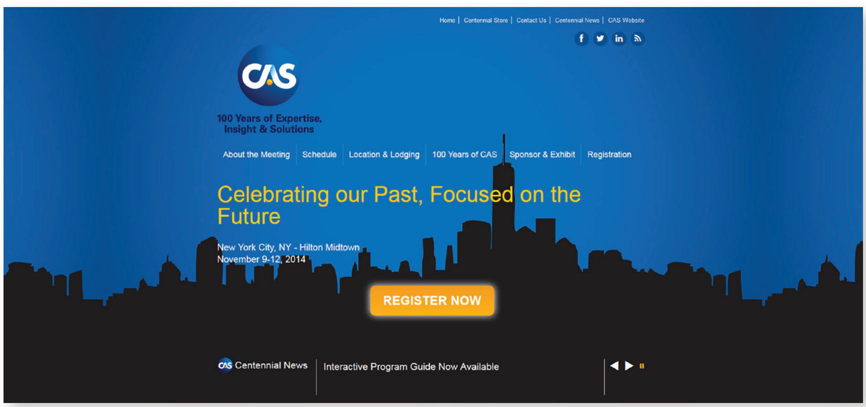
Projects supporting the CAS Centennial, a year-long campaign that culminated in the CAS Centennial Celebration and Annual Meeting in New York City last November, received awards in two categories.

The CAS was also honored for the successful launch of its membership program for university students, CAS Student Central, in January 2014, and for *Actuarial Review*'s March/April 2014 cover story, "The Great Trade-Off and the Birth of the CAS."

The complete listing of awards includes:

- **A silver award in the category of "General Excellence in Web Publishing (Event/Convention)" for the CAS Centennial Celebration Website.**

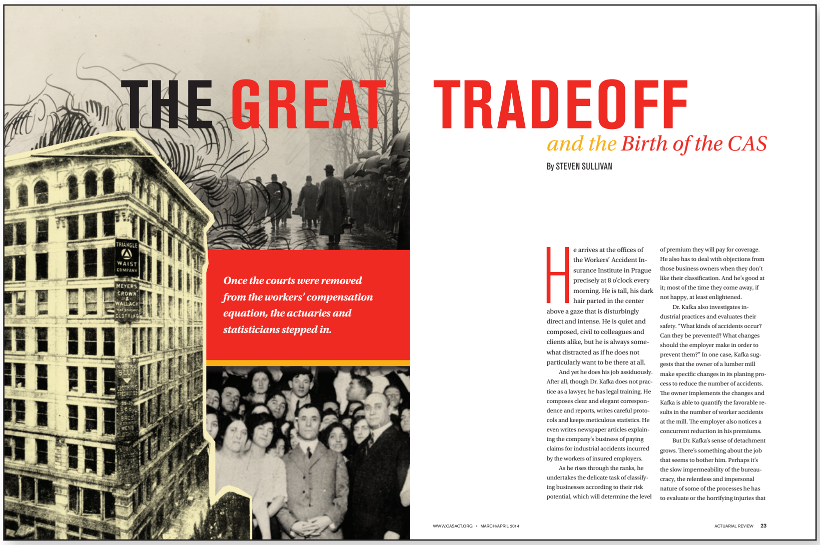
The standalone website featured an interactive Centennial timeline that included milestones from CAS history, as well as a Centennial countdown clock, a Centennial news ticker and a photo/video gallery. The website is the culmination of years of work compiling photos, videos and historical milestones.



The CAS Centennial Website.

"It was a unique privilege and thoroughly enjoyable experience to pay tribute to the 100-year history of the CAS," said Joanne Spalla, Chair of the CAS Centennial Marketing Committee. "For many CAS members and staff, notably our dedicated Centennial Committees, this campaign was years in the making. Seeing these outstanding projects enjoyed by our members and recognized by these awards is truly validating."

- **A silver award in the category of "Feature Article in a Magazine" for *Actuarial Review*'s March/April 2014 cover story, "The Great**



THE GREAT TRADEOFF

and the Birth of the CAS

By STEVEN SULLIVAN

Once the courts were removed from the workers' compensation equation, the actuaries and statisticians stepped in.

He arrives at the offices of the Workers' Accident Insurance Institute in Prague precisely at 8 o'clock every morning. He is tall, his dark hair parted in the center above a gaze that is disturbingly direct and intense. He is quiet and composed, civil to colleagues and clients alike, but he is always somewhat distracted as if he does not particularly want to be there at all.

And yet he does his job assiduously. After all, though Dr. Kafka does not practice as a lawyer, he has legal training. He composes clear and elegant correspondence and reports, writes careful protocols and keeps meticulous statistics. He even writes newspaper articles explaining the company's business of paying claims for industrial accidents incurred by the workers of insured employers.

As he rises through the ranks, he undertakes the delicate task of classifying businesses according to their risk potential, which will determine the level of premium they will pay for coverage. He also has to deal with objections from those business owners when they don't like their classification. And he's good at it; most of the time they come away, if not happy, at least enlightened.

Dr. Kafka also investigates industrial practices and evaluates their safety. "What kinds of accidents occur? Can they be prevented? What changes should the employer make in order to prevent them?" In one case, Kafka suggests that the owner of a lumber mill make specific changes in its planing process to reduce the number of accidents. The owner implements the changes and Kafka is able to quantify the favorable results in the number of worker accidents at the mill. The employer also notices a concurrent reduction in his premiums.

But Dr. Kafka's sense of detachment grows. There's something about the job that seems to bother him. Perhaps it's the slow impermeability of the bureaucracy, the relentless and impersonal nature of some of the processes he has to evaluate or the horrifying injuries that

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ACTUARIAL REVIEW 23

The March/April 2015 Actuarial Review.

Trade-Off and the Birth of the CAS."

In the article, author Steven Sullivan details events leading up to the development of the property and casualty actuarial profession and focuses on the Triangle Shirtwaist Company fire in 1911. The story serves as a reminder of how far the U.S. has come regarding workplace safety and the integral role the CAS played in those developments.

- **A bronze award in the category of "Integrated Mixed-Media Campaign" for "Celebrating the CAS Centennial," the assortment of projects that paid tribute to the CAS's 100th anniversary.**

Components of the campaign included the CAS Centennial Museum, which housed artifacts and exhibits from pivotal moments in CAS history; the CAS Wall of Names, a 40'x8' banner displayed at the Centennial Celebration that listed every person who has earned CAS credentials over the 100-year history; a commemorative CAS Centennial history book featuring historical photos and personal recollections from CAS members; and a Centennial video that highlights milestones from 100 years of the CAS, including testimonials from the CAS's oldest living member, 96-year-old Bill Wieder, who earned his Fellowship in the Society in 1947.

- **A bronze award in the category of "Integrated Mixed-Media Campaign - Membership" for the launch of CAS Student Central in January 2014.**

STUDENT CAS CENTRAL

FOCUSED ON YOUR FUTURE

The marketing campaign that launched CAS's free university student membership program included a dedicated CAS Student Central website and online community, a video highlighting CAS members in the early stages of their careers, social media pages across LinkedIn, Facebook and Twitter, and an infographic showcasing the CAS's credentialing benefits and resources for students. One year later, the program now boasts over 3,100 student members from 370 different universities.

"The CAS has always prided itself on producing quality work for present and future CAS members that is innovative, relevant and reflective of our core values as an organization," said CAS President Bob Miccolis. "The work produced during our Centennial year, from publications to special projects to launching new programs, was particularly exceptional. These awards speak to the hard work of our dedicated CAS volunteers, staff and external partners who took 100 years of CAS history and created memorable, lasting tributes to the organization."

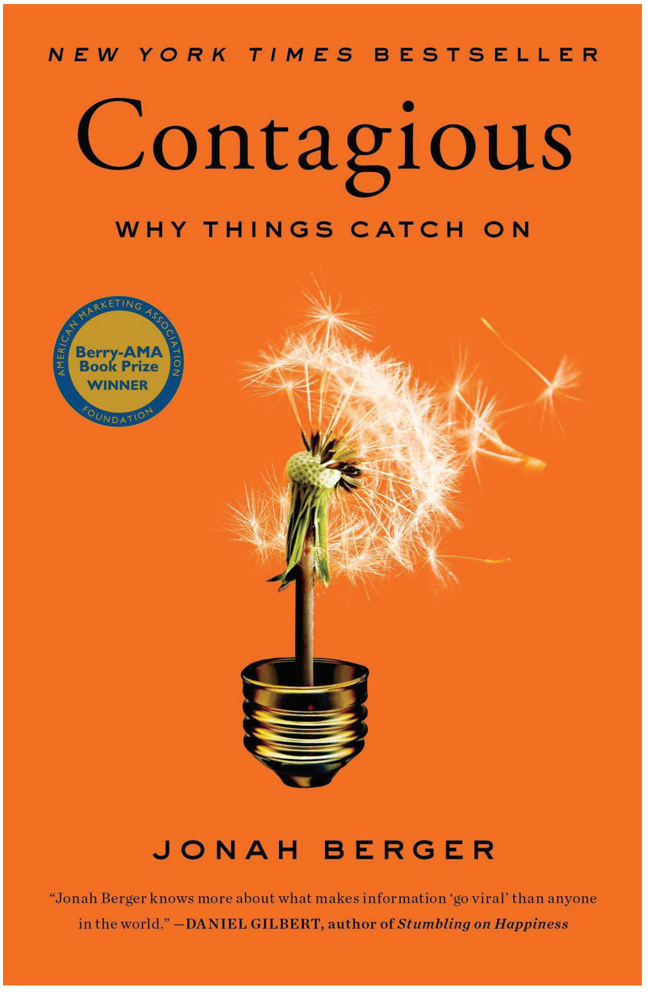
CAS Wall of Names.

Wharton Marketing Professor to Keynote CAS Annual Meeting

BY DAVE CORE, CAS DIRECTOR OF PROFESSIONAL EDUCATION AND RESEARCH

Jonah Berger has been chosen the featured address for the CAS Annual Meeting, November 15-18, in Philadelphia. Dr. Berger is a marketing professor at the Wharton School at the University of Pennsylvania and author of the recent bestseller, *Contagious: Why Things Catch On*. His address will focus on key findings in his book and how they apply to the world of actuarial science.

Program Planning Committee Vice Chair Beverly Phillips, ACAS, recommended Berger as a well-known researcher into social epidemics — how some products and ideas catch on and become popular while others die out and become abandoned. “Believe it or not, whether an organization, product or idea is the best does not determine whether it survives,” said Phillips. “Dr. Berger’s research shows that word of mouth has more impact than advertising or inherent quality. The CAS is clearly the best research, education and professional organization for casualty actuaries, but being the best doesn’t guarantee survival. Actuaries in large corporations might have the best strategies and recommendations for senior management, but the best ideas don’t always get implemented. I believe we can leverage what Dr. Berger has learned to make sure our organization, our message and our ideas catch on.”

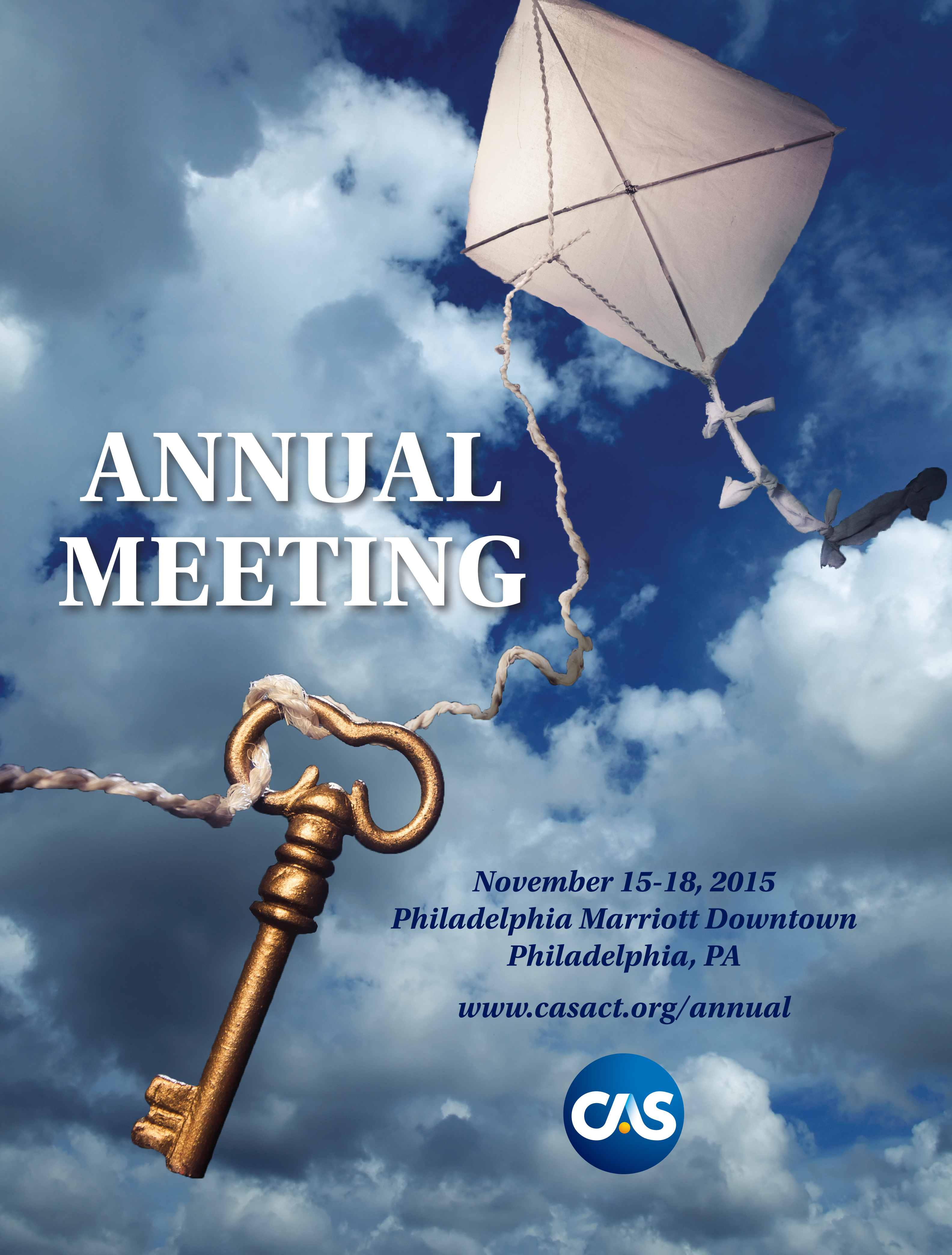


Jonah Berger

In *Contagious*, Berger reveals the secret science behind word-of-mouth and social transmission. He explains how six basic principles drive all sorts of things to become contagious, from consumer products and policy initiatives to workplace rumors and YouTube videos. *Contagious* combines groundbreaking research with powerful stories. If you have wondered why certain stories get shared, emails get forwarded or videos go viral, *Contagious* explains why and shows how to leverage these concepts to craft contagious content.

Berger has spent over 15 years studying how social influence works and how it drives products and ideas to catch on. He has been published in several top-tier academic journals, has consulted for a variety of Fortune 500 companies, and had his work covered by the *New York Times* and *Harvard Business Review*.

Annual Meeting registration is now open at www.casact.org/annual.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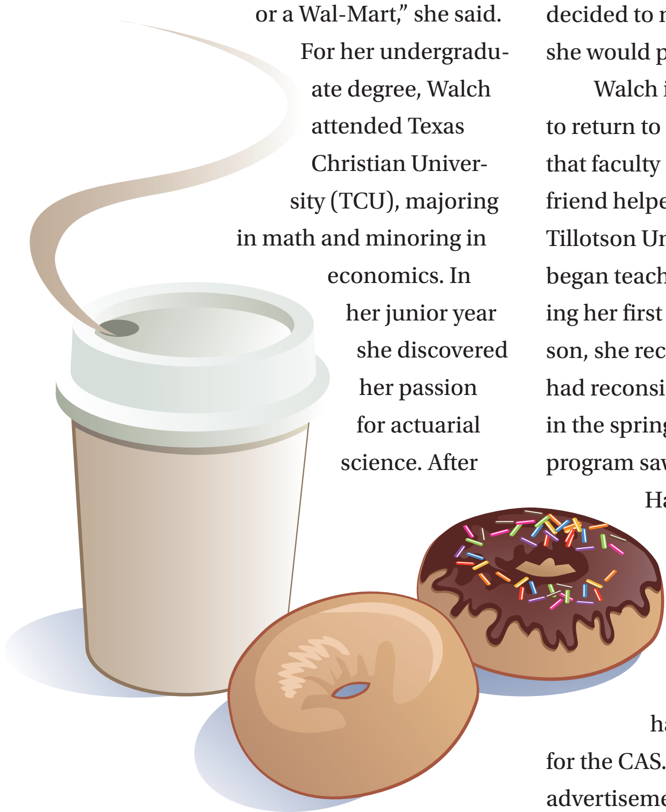
MEMBER PROFILE BY MATT CARUSO, CAS MEMBERSHIP AND VOLUNTEER MANAGER

Alisa Walch: A Texan Returns Home and to the Classroom

CAS members come from diverse backgrounds and influence the actuarial profession in numerous ways. Alisa (Havens) Walch (FCAS 2015) is a small-town girl from Texas who moved to New England to work in the insurance industry. She ultimately discovered that her heart was in academia back home in Texas. She is a CAS member with the ability to constructively influence on many young people, which could have a positive impact on the property and casualty profession in the future.

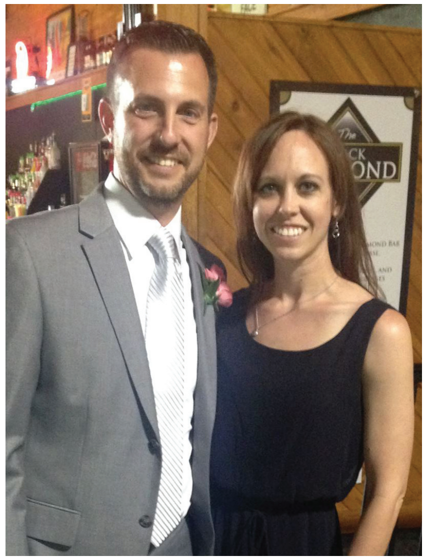
Walch grew up in Alpine in the Chihuahua desert of west Texas. "Alpine is small enough to have no stop lights or a Wal-Mart," she said.

For her undergraduate degree, Walch attended Texas Christian University (TCU), majoring in math and minoring in economics. In her junior year she discovered her passion for actuarial science. After graduating from TCU, she followed a professor's suggestion and completed a Master's degree in actuarial science at the University of Texas (UT) at Austin.



Following school and an internship, Walch worked at The Hartford in Connecticut for three years. An outstanding cultural contrast that she noticed from Texas is that, in Connecticut, there are Dunkin Donuts seemingly everywhere to satisfy New Englanders' insatiable need for coffee. Being a small-town Texan living far from family made for a difficult transition. While she liked her coworkers and the actuarial work, she was not comfortable in the corporate environment. Walch and her boyfriend decided to move back to Austin where she would pursue teaching.

Walch inittially set up an interview to return to UT at Austin but was told that faculty required a Ph.D. However, a friend helped Walch get a job at Huston-Tillotson University in Austin, where she began teaching in the fall of 2011. During her first semester at Huston-Tillotson, she received a call that UT at Austin had reconsidered and had an opening in the spring. The growing actuarial program saw Walch's experience at The Hartford as an opportunity to enhance the program. The timing was perfect, and she joined the faculty.



Alisa Walch and her husband, Dan.

Although she teaches full-time, Walch has carved time to volunteer for the CAS. In 2014 she answered an advertisement for a case studies working group within the CAS University Engagement Committee. The volunteer opportunity aligned perfectly with what she wanted to accomplish in the classroom, and in the fall of 2015 she will be introducing a new class on property and casualty case studies. "I have been able to find CAS volunteering opportunities that match up with work goals," Walch said.

Walch continues to strive to develop students into robust actuaries. "It is nice working with students to help them find out what they want to do and how to do it," she said.

She is happy to be back in Texas doing what she loves, but she doesn't forget her time spent "up North." Her time in New England was relatively short but has had a lasting influence. Every Sunday before church, she stops at Dunkin Donuts to get coffee.

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THE MAD world of Political RISK INSURANCE

BY STEVEN SULLIVAN

By the time you need it, it may be too late to get it.

It could have been a scene from one of its film productions: In October, 2014, 12 armed men in balaclavas burst into the administrative offices of the Yalta Film Studio on the Black Sea and made everyone lie on the floor. The gunmen had been sent by the Crimean government, newly created in the wake of Russia's recent invasion. They were there to expropriate the studio.

Fifteen years ago, when Crimea was part of the Ukraine, a pair of Moscow businessmen, the Arshinov brothers, paid $3 million for the ailing studio and invested substantially in it over the years. But the Crimean government said that sale was illegal. The brothers would be entitled to only $100,000 in compensation.

It was a substantial loss, and there wasn't much the brothers could do about it unless they had a political risk insurance policy. Like any insurance policy, however, by the time you know you need it, if you don't already have it, it's too late to get it.

Risk versus Reward

Though some may debate the validity and the existence of global warming, it's hard to deny the existence of globalization.

"Globalization is not just some economic fad," wrote *New York Times* columnist Thomas Friedman in *The Lexus and the Olive Tree* in 1999. "It is an international system — the dominant international system that replaced the Cold War system after the fall of the Berlin Wall. The 'post-Cold War world' should be declared over. We are now in the new international system of globalization."

Globalization is a system of interconnections, mostly of the free-market variety, which can be highly advantageous for both established economies seeking to diversify and developing economies seeking to grow. But it can also be extremely dangerous for enterprises that want to invest in those economies. Combine that interconnectedness with an increasing volatility, and one unstable card can threaten the entire house.

"There is anxiety in the global financial system," wrote Swedish economist and politician Anders Borg in advance of the 2015 Davos Summit of the World Economic Forum, an international institution for public-private cooperation. He went on to say that the Eurozone fiscal deficit would be below three percent for 2015 and that "some of the countries in crisis, particularly Spain, Ireland and Latvia, have made substantial progress." The prospects for growth, he said, are promising.

So why the anxiety? Borg cites a couple of reasons: out-of-sync monetary policies that create turmoil in currency markets, uncertainty in emerging economies, and geopolitical risk — conflicts in Syria, Iraq, Ukraine and other places almost too numerous to mention.

"It is genuinely difficult for businesses to navigate a global environment … [given] slow recovery and clear geopolitical and economic risks," he concluded. "And given that banking is also going through an enormous regulatory overhaul, it's no wonder there is anxiety. But let's be clear: it's an improvement on the crisis-related depression we have seen … over the past few years."

As of the Davos Summit in January 2015, Greece, though long-troubled, had not yet melted down. Negotiations with Iran were ongoing, but the prospect of the sanctions being lifted was distant at best. And President Obama had only just declared a change of U.S. policy with Cuba. Each of these developments carries with it tremendous potential opportunities for investors. But each also carries potential risks — perhaps big ones.

"Who knows where the next crisis will be?" says John Lavelle, head of political and credit risk, North America, the Willis Group, New York City. "Third-world countries are obvious risks but are they the only risks? Not anymore. To [paraphrase] an old movie, 'we live in a mad, mad, mad, mad, world.'"

There's no shortage of possible calamities that can befall a company that dares to do business in or with a foreign country. There are two kinds of basic coverage a company will need to protect itself: contract repudiation (or contract frustration) insurance and political risk insurance.

Contract repudiation insurance will protect a company if, for instance, it enters into a contract with a foreign government to build a piece of equipment. Assume it will take the company one year and a million dollars to build the equipment, at which time it will ship it to the client, and the client will pay the company. But six months into the contract, things change. The government decides its budgetary priorities have shifted and changes its mind. Or the entire government is replaced by a new one that now doesn't need this piece of equipment anymore. Or events in the country have spiraled out of the government's control, and paying bills to foreigners is the last thing on its agenda.

In the meantime, the company is out a million dollars. If it had carefully negotiated a contract with a qualified insurer before it had signed the contract with the foreign government, the loss would have been covered.

There's no shortage of possible calamities that can befall a company that dares to do business in or with a foreign country. There are two kinds of basic coverage a company will need to protect itself: contract repudiation (or contract frustration) insurance and political risk insurance.

Political risk insurance protects against a whole host of scenarios, all of which must be carefully defined and included in the language of each policy. And, of course, both kinds of policy must be purchased in anticipation of such events, not in their aftermath.

Here is a rundown of the kinds of events that can be covered by political risk insurance:

Expropriation or nationalization — defined as "the illegal takeover of an insured's operation without compensation" — is what happened to the Arshinov brothers' film studio. It can also include the government-ordered destruction of a foreign business's assets.

In 2012 an analysis by the Venezuelan Confederation of Industries determined that between 2002 and 2012 the government of Hugo Chávez in Venezuela took over 1,168 foreign and domestic companies. They included operations in oil and gas, aluminum, cement, gold, iron, steel, farming, transportation, electricity, food production, banking, paper and the media.

Forced abandonment. When political violence causes a company to abandon its foreign assets, the company not only loses the assets, but also incurs the costs of evacuating personnel. Similarly, when the home country requires the insured to permanently divest itself of all or part of its foreign enterprise, it's called forced divestiture.

Selective discrimination. "Let's say I own a local utility company in a foreign country and I'm the only foreigner in that particular business," posits Lavelle. "The government comes in and, simply because I'm a foreigner, decides to hit me with a tariff. But the tariff doesn't apply to the local owners of power plants, only to the foreign-owned." The foreign owner is now at a competitive disadvantage, which could carry a significant cost.

Political violence. This comprises all the obvious stuff — war, riot, civil war, revolution, rebellion, insurrection, coup d'état, sabotage, terrorism, strikes or other acts of politically motivated vandalism. If companies doing business in Iraq, Syria or Egypt didn't already have this coverage, they're probably out of luck.

Business interruption. According to the definition used by the Willis Group, this is a financial loss caused by political violence, confiscation, expropriation or nationalization. Losses are calculated as the aggregate of estimated net profits during the policy period, the cost of trying to continue the normal operation of the foreign business and continuing expenses the business incurs in normal times, such as salaries and leases.

Currency inconvertibility or exchange transfer risk. This occurs when a foreign government imposes orders or regulations that prevent the insured from converting local currency into its domestic currency or from transferring its domestic currency from a foreign enterprise. This typically happens in emerging markets during financial crises. Companies with investments in Greece, Spain and other precarious Eurozone countries are certainly concerned about this risk.

Public and Private Markets

The whole idea of political risk coverage arose as a government program to protect investors in post-war Europe and Asia under the Marshall Plan. In the 1960s, that evolved into the Agency for International Development (AID), which incorporated expropriation and war-risk coverages, mostly in developing countries. In 1971 an independent government agency, the Overseas Private Investment Corporation (OPIC) was created to catalyze development-focused investment by U.S. companies in emerging market countries. Today, OPIC's finance tools — including political risk insurance — can support development investment in more than 160 countries. In 2014 alone, OPIC political risk insurance supported increased lending activity in Turkey, Romania and Ukraine; the largest wind farm in Kenya; and humanitarian aid services in the Middle East. OPIC also financed numerous other private-sector projects in Africa, Latin America, the Middle East, Europe and Asia.

"OPIC is the U.S. government's development finance institution and offers development tools of financing, investment funds and political risk insurance to U.S. private sector investors," says OPIC spokesman Charles Stadtlander.

OPIC is funded by an annual administrative appropriation from Congress; for the last two years that's been about $62 million. Using this OPIC operates a development investment portfolio of about $18 billion in financing and insurance that has generated income for the past 37 straight years, according to Stadtlander. "That goes back to the U.S. Treasury. Last year we gave back $358 million; the year before, it was $426 million. All on an annual appropriation of just over $60 million that allows us to operate that $18 billion portfolio, which is having an outsized development impact overseas."

Several insurance products OPIC pioneered give investors the right to recover losses from a foreign government's failure to meet contractual obligations.

"It applies more to financial contract compliance rather than political violence," says John Moran, OPIC vice president for insurance. "We have a bilateral agreement in each country where OPIC operates that gives us certain rights where there's been a violation of international law by the home government. We have the right to recover from the government when we've paid out a valid claim. That enables us to charge rates in places like Liberia, Ukraine, Afghanistan, Pakistan and Iraq that private insurers can't."

According to OPIC's 2014 claims report, the agency has made 295 insurance claim settlements since 1971 totaling $976.8 million. Cash recoveries on claims total $754 million. Additional recoveries in the form of OPIC guaranteed obligations bring the total to $980.1 million — 100 percent of total claim settlements.

The world is an increasingly wild and crazy place — potential risks can lurk just about everywhere. How do underwriters assess those risks?

Most countries in the Organization for Economic Co-operation and Development (OECD) have established similar government agencies that protect their domestic companies from political risk in foreign markets. They include NEXI in Japan, SINOSURE in China, EDC in Canada, ECGD in Britain, COFACE in France and EFIC in Australia. In 1987 the World Bank created the Multilateral Investment Guarantee Agency (MIGA) to provide political risk coverage to its member countries.

Lloyd's of London and the American International Group (AIG) are primarily responsible for taking the political risk market private in the mid-1970s, and the market has been growing significantly ever since. These days the main private-market players include Lloyd's, Sovereign, Chubb and Zurich, among many others.

Rule of Law is Fundamental

What countries are most prone to political risk? Which ones are insureds most concerned about? As has already been pointed out, the world is an increasingly wild and crazy place — potential risks can lurk just about everywhere. How do underwriters assess those risks?

First, they look at who the client is, its experience in a country with similar projects, and the extent to which the client is willing to share the risk with underwriters.

They also look at the structure of the transaction, the length of the requested policy period, the terms of repayment and the type of cover being requested.

Next is the project itself. Is it a priority for the country? To what sector does it belong? Are the key counterparties involved financially viable? What assets are being covered? Where are they located? And if political violence and terrorism coverage is involved, what security measures are in place?

"The country of risk also plays a role, whether it's countries we already cover or ones that we may be thinking of," explains Lila Rymer, head of U.S. trade credit and political risks underwriting for the Beazley Group, NYC. "At Beazley, aside from sanctioned countries, we rarely stop considering new deals blanket-close in a country. We differentiate ourselves by pursuing what we deem to be good risks in some of the most challenging countries. We'll look at each deal individually and listen to why the client thinks it's attractive. Of course, in a relatively benign country we'll look at longer policy periods, larger line sizes and cover for a broader range of sectors or insureds. In a more challenging country we might look at shorter periods, smaller line sizes, and [we might] limit our appetite to more experienced clients."

In spring 2015, the Willis Group published "Marketplace Realities 2015," which listed and briefly evaluated some of the world's hot spots "where the risks are significant." The locations included Iraq, Russia, former Soviet states such as Georgia, Kazakhstan and Ukraine, Brazil, Argentina, China, Mexico and Turkey. Mexico and Turkey are both OECD countries, as is Greece, which should probably be added to this list.

According to the 2014 Global Resilience Index published annually by Oxford Metrica, an independent analytics and advisory firm, Norway is the most reliable country in the world to invest in, while Venezuela brings up the rear of the list at number 130. Ukraine and Kazakhstan dropped in the rankings more than any other country in the world. Not surprisingly, Greece fell from 54th position to 65 in 2014.

Another tool useful to insurers and insureds is the Corruption Risk Index developed by Verisk Maplecroft, a global risk analytics, research and strategic forecasting company headquartered in the United Kingdom. Corruption has become an increasing problem, particularly among developing economies (sub-Saharan Africa, Iraq, Libya, etc.), but also in more established ones such as Russia, India, China and Brazil.

According to Charlotte Ingham, senior political risk analyst at Maplecroft in London, the risks posed by high-level corruption and a culture of impunity from human rights and environmental abuses may not be as obvious as confiscation or political violence, but they can pose long-term risks to a company trying to do business in such countries.

"The rule of law underpins the entire investment climate of any given country," says Ingham. "Rule of law and corruption go hand in hand. When looking at emerging markets or frontier economies, access to remedy if something goes wrong — and a degree of certainty in terms of what's going to happen next — is fundamental. In addition to the reputational risk of being associated with a corruption scandal, popular dissatisfaction with the level of corruption also plays a role in driving unrest and instability, creating operational challenges."

Strategic, Not Tactical

So what about those two big question marks as of this writing, Iran and Cuba? One is attempting to loosen crippling international sanctions and the other is taking steps to emerge from an equally crippling U.S. embargo. Both could be extremely attractive to a certain kind of investor.

"In places like Iran, the underwriters will use their assessment tools," says Lavelle. "They subscribe to market intelligence and conduct a microeconomic review of the country to assess its political stability. But when going into a market like Iran, which had been under sanctions for so many years, underwriters will always take a go-slow approach."

Ingham points out that Iran's highly educated workforce would add to its attractiveness if sanctions are lifted.

"And many times, underwriters will just get on a plane and visit these markets," Lavelle adds, "talk to the people — economists, central banks — and get a first-hand assessment of how viable the market will be three months or six months or a year out."

"Cuba is still coming on stream," says Gary Mendell, president of Meridian Finance Group in Santa Monica, California. "I don't think anybody knows what the rules will be but we're watching it closely. There's no clear message yet from the government." But even though the U.S. has been barred from that market in the past, European underwriters were never under the same restrictions; they've been assessing the risks in Cuba for years.

"And many times, underwriters will just get on a plane and visit these markets," Lavelle adds, "talk to the people — economists, central banks — and get a first-hand assessment of how viable the market will be three months or six months or a year out." OPIC's John Moran says that insurers will often hire local counsel to give them a sense of the legal and regulatory landscape in a particular country.

Besides, it's not as if underwriters don't already have exposure in markets like Greece. They do, and they can't just walk away from it. But there are two forces pressing against insurers. First, the worse things get, the more pressure there is from the bottom to take on more exposure; customers, exporters and investors suddenly need more Greece cover. They're even willing to pay the higher premiums.

Exerting pressure from the top are the directors, risk managers and reinsurers, putting limits on the carrier's capacity for coverage. And as things get more challenging in a place like Greece, this pressure from the top and the bottom gradually closes the gap until there's no capacity left.

"Overall, I expect the market will be growing," says Beazley's Rymer. "Every day there appears to be a new hot spot in the world: the Middle East, Latin America, Russia, Greece. So there's more awareness of our products by new clients and more demand for political risk insurance overall. However, even amidst the heightened risk environment, there has been downward pressure on pricing due to increased capacity, as the financial community is putting money into insurance, which is leading to new entrants in the market."

"The classic thing we like to see and not just because we're trying to sell this stuff — is that companies look at their foreign investments strategically and not tactically," says Meridian's Mendell. "Things might look okay now but they could turn sour over the course of a contract or during the time a company is going to be investing in a particular market. That's the time to purchase this type of coverage, so if something does happen they know they're protected. When you're reading about a country in the newspaper, it's probably too late to get coverage."

Steven Sullivan is a freelance writer and editor based in Baltimore, Maryland.

Price Optimization and the Descending Confusion

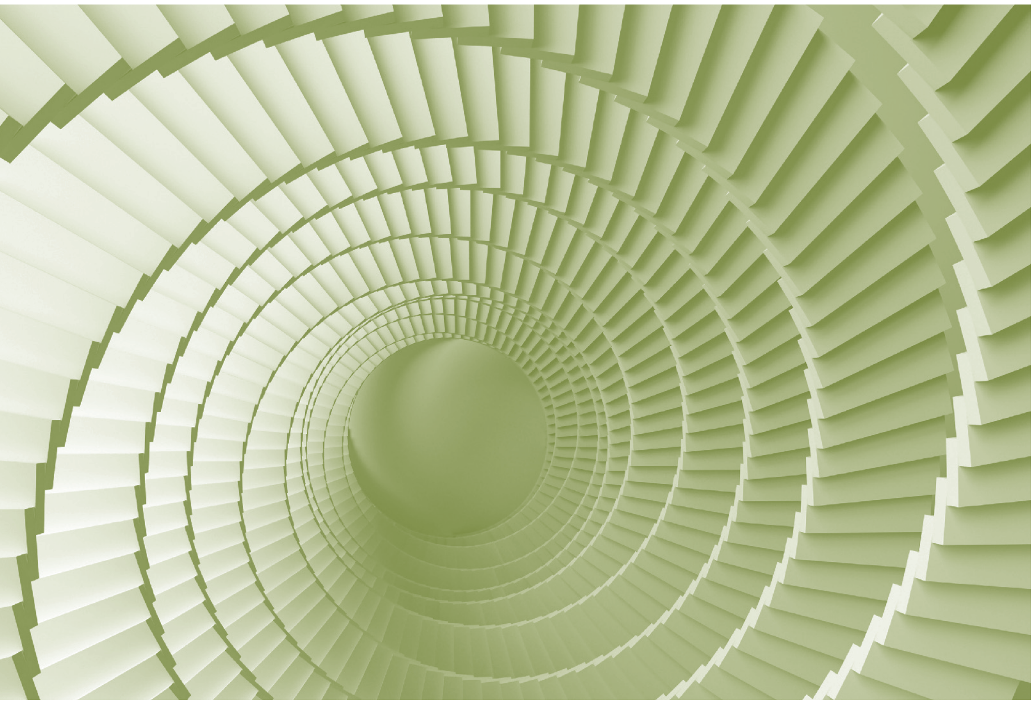
By ANNMARIE GEDDES BARIBEAU

Price optimization has several meanings, and that's just the beginning.

About a half-dozen state insurance departments in recent months have issued bulletins warning auto insurers against what consumer groups call "price optimization."

To date, insurance departments from California, Florida, Indiana, Maryland, Ohio, Vermont and Washington have issued such warnings.

That regulators are issuing bulletins on the subject is "curious" for several reasons, Robert Hartwig, president of the Insurance Information Institute (III), told lawmakers at the National Conference of Insurance Legislators (NCOIL) meeting in July. His reasons include the absence of consumer complaints and detectible market disruption.



Insurance commissioners strive to ensure that rates are not excessive, inadequate or unfairly discriminatory. So when insurers are accused of practices that result in unfairly discriminatory rates, regulators rightfully pay attention — and so do actuaries.

In evaluating the practice of price optimization, regulators are also looking into other ratemaking issues through the National Association of Insurance Commissioners' (NAIC) Casualty Actuarial & Statistical Task Force, said John M. Huff, Missouri's insurance commissioner and president-elect of the NAIC.

The price optimization discussion will include "recommendations on a reasonable range of rating factors appropriate for the setting of rates by insurers," he said. "The discussion must also include issues of additional transparency and disclosure requirements in rate filings."

Consumer groups assert that price optimization is being used to discriminate among customers who buy private automobile insurance. One particular component of price optimization that has garnered significant regulatory attention applies to the basic economic concept of price elasticity of demand (or price elasticity), which can be used to determine the demand sensitivity when prices change.

"Price elasticity purposely raises premiums of loyal customers who are more likely to pay higher premiums than shop around," said Robert Hunter, an actuary and director of insurance for the Consumer Federation of America.

"That should not be taking place as it violates the legal requirements of adequate, not excessive, nor unfairly discriminatory ratemaking," said Michael Angelina, executive director of Saint Joseph's University's Academy of Risk Management and Insurance and current chairperson of the American Academy of Actuaries' Price Optimization Task Force. "That is not what price optimization was intended to do," he added.

It is unclear how commonly auto insurers are applying price elasticity for determining prices.

The insurance industry itself does not fully support price elasticity. "We agree that determining prices on the basis of elasticity of demand is inappropriate and regulators should focus on it," said David Snyder, vice president of policy development and research for the Property Casualty Insurers Association of America (PCIAA). "The danger is [that] because of different definitions, regulators can limit other acceptable practices."

Definition Shapes Regulation

How price optimization is defined sets the tone for public understanding and policy discussion. Herein lies a critical challenge.

The NAIC's task force is in the process of developing a white paper to be finalized this fall. Its goals include defining price optimization and providing recommendations for regulators. "We are relying on (the) NAIC process to drive consistency and consensus among the states, where applicable," Huff said.

As they consider consumer groups' complaints about price optimization, insurance commissioners have been presented with varying and perspective-based definitions. Which version they choose can have a direct impact on how insurers can determine rates and prices.

"Many of these (bulletins) have been written in a way that is so broad, many long-standing practices would be called into question," Hartwig said. "It is also the case that, interpreted literally, many of these bulletins would prohibit an insurer from providing a discount for loyalty or accident forgiveness."

This concern is also shared by the American Academy of Actuaries and the Casualty Actuarial Society. In a July 31 letter to the NAIC's task force, the Academy wrote, "Some bulletins would appear to prohibit or restrict long-standing practices such as considering competitor rates or considering consumer behavioral response to rate changes…"

An informational memorandum released last May by Florida's Office of Insurance Regulation illustrates why it can be difficult for insurers to know if decades-long pricing practices are suddenly being discouraged.

The bulletin defines price optimization as "a process for modifying the insurance premium that would otherwise be charged to an insured or class of insureds in order to maximize insurer retention, profitability, written premium, market share, or any combination of these while remaining within real world constraints."

A broad interpretation of Florida's definition "is likely not in line with market practice for the past 30 years," said Ben Newton, chair of the CAS Ratemaking Committee and managing director of Pennan Consulting.

The NAIC task force's May 14 draft — the most recent version at press time — does not clearly define price optimization. Instead, it presents six different definitions, including those by the CAS, the Academy and the CFA Institute.

To appreciate the challenge of defining price optimization for rate regulation, consider descriptions by the CAS compared to that of the CFA.

The CAS defines price optimization as "the supplementation of traditional actuarial loss cost models to include quantitative customer demand models for use in determining customer prices. The end result is a set of proposed adjustments to the cost models by customer segment for actuarial risk classes," according to the white paper draft.

The definition presented by the CFA, however, casts price optimization in a different light. According to the NAIC white paper, CFA defines it as "a practice where premiums are set based on the maximum amount a consumer is willing to pay, rather than the traditionally accepted methods of calculating premiums based on projected costs, such as claims, overhead and profit."

The New Scrutiny

Regulators are also concerned that using sophisticated methods for price optimization could "extend beyond acceptable levels of adjustment to cost-based pricing," which could cause unfair rates specific to the policyholder, according to the NAIC Task Force white paper.

"I started raising concerns (to regulators) in 2013 after attending a CAS webinar called 'Price Optimization vs. Actuarial Standards' and realized that insurers were using models to move prices away from risk-based prices for the first time," Hunter said. "The eye opener was the price elasticity," he added. "That's what really got me going."

Hunter found evidence that Allstate was doing just that in a Wisconsin rate filing. In December 2014, the CFA released a statement that, in the organization's opinion, Allstate was "basing customers' auto insurance premiums on a new factor, called 'marketplace considerations,'" which is not related to the risk that a driver will cause an accident or file claims.

After reviewing rate filings in 30 other states, he saw that Allstate was applying price elasticity to determine premiums for individual policyholders as well, which is against states' regulations. According to the CFA statement, Allstate introduced "illegal price systems" in 16 states.

By assigning individual customers to microsegments in its rate filings, Hunter said, the insurer was illegally charging customers at individual rates. After discovering some 300,000 microsegments in Pennsylvania, he noticed that only 500 of the segments contained more than one person. "That was, in my view, evil," he added.

Hartwig offers a different interpretation. Hunter is "mistaken," adding, "Allstate has microclasses. They are not using individual elasticity of demand." Newton also offered, "This might have just been a way for Allstate to provide regulators with required documentation and transparency while protecting their intellectual property."

Justin Herndon, an Allstate spokesperson, said that the company's price is determined by risks and costs. "We continuously update our price so we can make sure customers benefit from the most advanced approaches," he said. "As a result, our prices are highly competitive and fair."

Hunter did not name another insurer practicing demand elasticity within the realm of price optimization, but he did say other insurers are engaging in the practice as well. "We have complaints from people and agents about large increases for loyal customers. Since insurers are so embarrassed by the use of these practices they do not tell the regulators … People have no idea what is happening," Hunter said.

Consumer groups also contend that price optimization is discriminatory because it can affect low income and/or minority groups. They reference a nearly decade-old Brookings Institute study to make their point.

Insurance industry studies offer a different view. African-Americans were more likely to shop around for auto insurance than other groups, according to the Insurance Research Council (IRC) study, "Shopping for Auto Insurance and the Use of Internet-Based Technology." Of the 1,168 respondents who shopped around for insurance, African-Americans were most likely to do so (at 33 percent) compared to 24 percent of whites and 22 percent of Hispanic respondents.[1]

An III survey from last year revealed that 68 percent of consumers with incomes below $35,000 shopped for insurance at policy renewal compared to 61 percent of consumers with incomes about $100,000.

Consumer groups have other objections, which fall under actuarial judgment.

Actuarial Judgment

It's no secret that the automobile insurance industry is highly competitive. Personas such as Progressive's Flo and Geico's gecko cater to price-sensitive customers.

"The competitive market has been really good for consumers," Angelina said. This is demonstrated by the fact that "there are countless advertisements urging policyholders to shop for lower rates and the residual market/assigned risk pools are at an all-time low."

For insurers to compete, they continually fine-tune their ratemaking strategies to ensure their particular approach — or "special sauce" — distinguishes their company from another. Thanks to greater data availability and the sophisticated models that meaningfully correlate information, special sauces have grown more robust — and complicated.

Price optimization, which includes several approaches,

[1] http://www.insurance-research.org/research-publications/shopping-auto-insurance-and-use-internet-based-technology

can be part of an insurer's special sauce. How actuaries use data, models and other technologies for determining prices, falls into the sphere of actuarial judgment. This allows actuaries to reach different conclusions or apply different methods to formulate special sauces.

Actuaries exercise judgment according to the Actuarial Standards Board's Actuarial Standards of Practice. Regulators can and do limit the boundaries of actuarial judgment — a reminder of why defining price optimization and clarifying issues concerning rate filing practices, including price optimization, are crucial.

At its basic level, rates are developed based on loss information, administrative costs and profit. This formula alone means that rates can depend on data quality, business costs and company goals (i.e., profitability, market share or fairness).

Price choices in ratemaking proposals fall under "profitability." These choices are also a matter of actuarial judgment and opinion.

Understanding that achieving profitability encourages a robust insurance market, virtually all states have allowed insurers to use non-loss data as part of actuarial judgment because it informs price through correlations of risk characteristics. Actuaries, for example, have found that certain individual risk characteristics such as age, occupation and education are reasonable for determining risk and therefore premium.

Rates themselves are generally based on loss information. Non-insurance information such as U.S. Census Bureau data, used for density and territorial modeling, can provide greater insight and context, Newton said. "To the extent that non-insurance data is predictive of losses and we can prove that, I think we should use it," Angelina said.

Insurance companies "have long been allowed to use actuarial judgment," Snyder said. "The big thing is not to confuse a particular use of data with long-used market adjustment practices."

The draft NAIC white paper recognizes that before the "introduction of data-driven quantitative techniques," the rating process was more subjective. "The key difference," it says, is that "market demand and customer behavior are quantified" and the effect of deviating from the lost cost is "mathematically measured."

Price optimization, Hartwig said, along with more data, helps insurance companies quantify and therefore improve actuarial decision making. "That's the benefit, because rates are more accurate," he said. "As insurers are getting better at estimating risk, rating classes get smaller and smaller."

Critics of price optimization, and any rating approach that deviates from loss data, say it can lead to price discrimination. Using non-insurance data provides different ways of moving the price away from actuarially sound rates, which can raise prices, Hunter said. However, Newton said, since rates in total must be actuarially sound, any increase for one insured must be offset with a decrease for another insured.

Many uses of so-called non-loss data are embedded in traditional ratemaking, which is why it will be important to distinguish exactly which types of data will be considered acceptable to regulators, Newton said.

Actuaries, Hunter believes, should develop price according to the traditional formula of loss data, administrative costs and profitability. Using "Big Data" is acceptable to him as long as it is loss data, he said.

"Hunter's position is untenable and archaic", Hartwig said, when "prices and rates have to reflect the real world in a competitive market place."

Regulatory Decisions

Insurance and actuarial groups alike hope that regulators will not "throw out the baby with the bath water" and carefully distinguish which practices, if any, are considered unacceptable.

Wayne Fisher, CAS immediate past president and board chair, pointed out that CAS members are bound by a Code of Professional Conduct and adhere to laws, rules and regulations.

"The CAS is providing the ratemaking practitioner's insight to the NAIC to assist its efforts to define price optimization and clearly define the 'rules of the game,'" he said. "In a highly competitive market, clear boundaries, as consistent as possible among the various states, will enable our members to use their analytical skills to advance their firms' competitive position, and have the confidence they are doing so within various rules and regulations."

Hartwig hopes that that if there are going to be restrictions on price optimization, "they be very narrow with a specific definition of acceptable and non-acceptable price practice."

However insurance regulators decide, one thing is for sure. The price optimization debate is not going away anytime soon.

Changing Reinsurance Market Makes This an "Exciting Time to Be an Actuary" BY JAMES P. LYNCH

A whirlwind of mergers is roiling the seas of reinsurance, but actuaries are well-positioned to help reinsurers manage the change, a panel of reinsurance executives said at the CAS Seminar on Reinsurance in Philadelphia.

"It is an exciting time to be an actuary," said Ed Noonan, chairman and CEO at Validus Holdings Ltd., at the CAS seminar. Many changes in insurance and reinsurance today involve smarter use of data. Actuaries are famously comfortable working with data, and their training gives them deep understanding of insurance.

The reinsurance market has seen several high-profile mergers announced in the past year, including XL Group and Catlin Group, RenaissanceRe and Platinum Underwriters, PartnerRe and Axis Capital, and Endurance Specialty and Montpelier Re.

The mergers were spurred by a new set of investors, with hedge funds and pensions creating and supporting reinsurers to an unprecedented degree. In the past few years, this breed of investors has poured tens of billions of dollars into reinsurance, mainly underwriting catastrophe risks.

Panelists said that the new investors were driven, in part, by low returns on their old mainstay investments — bonds — and in part by the fact that catastrophes aren't correlated with bond risks, which helps keep total risk in their portfolio low. New investors settle for, say, a seven percent return because it's higher than what they can get in the bond market but still considerably lower than the double-digit return that reinsurers typically required.

All of the new capital drove down reinsurance rates and, combined with low interest rates, has depressed returns on capital. Meanwhile, said Carole Ferrero, a Fellow of the CAS and president and global chief underwriter for Gen Re, insurance companies are retaining more of the risk they have traditionally sent to reinsurers. Reinsurance company mergers, however, can result in larger entities that are more capable of diversifying, growing internationally or expanding into new lines of business.

The investment model — using an insurance operation to fund other investments and acquisitions — harkens to the multi-decade success of Berkshire Hathaway.

The mergers are one signal that the new investors aren't going away, at least not soon. John Berger, CEO at Third Point Reinsurance Ltd., noted that hedge fund managers are attracted to the permanent capital base a reinsurer provides.

After the 2008 financial meltdown, Berger explained, hedge funds were hit with heavy withdrawals, but operating a reinsurance company provides permanent capital with which to invest and underwrite against.

Noonan added that the investment model — using an insurance operation to fund other investments and acquisitions — harkens to the multi-decade success of Berkshire Hathaway. Both Noonan and Berger operate firms partnered with alternative capital providers.

The new investors have also been increasing their reinsurance presence during a notably benign period. The past decade has been relatively quiet for catastrophes, meaning results have been good. Panelists suggested that things have the capacity to change if catastrophes start to throw results for a loop.

To succeed during these changes, Berger said, actuaries have to get a good fundamental grasp of the business and other key reinsurance positions: underwriting, investment and executive. "Go out of your way to develop that awareness," he advised.

Actuaries continue to play critical roles at insurance companies, added Noonan.

"You're not going to give up your seat at the table as the key risk manager and analytical partner," he stated. "Insurance companies turn to their actuaries to validate that work." ●

Reinsurance Mergers Launch a Tricky Wave, Analysts Say BY JIM LYNCH

Despite the recent uptick in reinsurance company mergers, corporate combinations can be a challenge to pull off successfully, two industry analysts said at the recent CAS Seminar on Reinsurance in Philadelphia.

Stock analysts Meyer Shields, FCAS, managing director of Keefe, Bruyette & Woods, and Alan Zimmermann, managing director of Assured Research, responded to questions from moderator and panelist Timothy Aman, FCAS, before a crowd of 200 actuaries at a session titled "Mergers & Acquisitions in the Property & Casualty Industry."

Shields remarked that the current wave of consolidation arrives after two to four years of low rates that have driven profits lower for a given level of risk. To offset, reinsurers feel the need to grow and diversify.

Meanwhile, he said, insurers are holding more risk themselves.

Smaller reinsurers, Shields stated, can be caught in a groupthink in which companies, investors and other observers believe that bigger companies are inherently better. Size brings some expense efficiency, he said, but there are not a lot of economies of scale in underwriting.

Zimmermann, with more than three decades of experience analyzing property-casualty insurers, has changed his view on mergers. He previously saw them as a largely negative shift, since a company's largest liability, loss reserves, is difficult to value. Actuaries are often asked to assess the reserves of a potential merger partner and take on other quantitative roles.

"The seller knows a lot more about his reserves than you do," Zimmermann said. Often those reserves were inadequate and the acquiring company ended up taking a charge to top up.

Now the property and casualty market has been so mature for so long that further conventional growth seems difficult, Zimmermann said. Merging and buying entire books of business make more sense.

He agreed that mergers rarely bring underwriting efficiency and noted that insurance mergers generate meager expense savings compared with combinations in other financial industries such as banking. A significant reinsurance merger can drive expenses $200 million lower, he said, but bank combinations can save billions.

A significant reinsurance merger can drive expenses $200 million lower, he said, but bank combinations can save billions.

The analysts also weighed in on a variety of merger-related topics:

- When asked which groups tend to "win" and "lose" in a merger, Shields stated that winners include the seller's shareholders (they usually receive a premium for their shares), as well as the industry at large, as the merger winnows the competitive field by one company.

  Conversely, mergers can be tricky for the acquiring company, though, because "they are assuming all of the risk."
- Mergers naturally cause what both analysts termed "social issues," such as questions from employees about new leadership and the company culture moving forward.
- Investors outside the industry sometimes see value in insurance that insurance companies don't see themselves. One example, Shields said, is the growth of insurance-linked securities. These bonds reinsure a share of the risk an insurance company bears and are structured so pensions, hedge funds and other investors can buy them. Another example, Shields noted, was the offer that an Italian investment company, Exor, made for PartnerRe. Exor is best known for owning a controlling share of Fiat Chrysler. Exor and other investors, Shields said, want to follow the example of Berkshire Hathaway, whose insurance operations have funded corporate acquisitions for decades and made a legend of top executive Warren Buffett.

Shields said it is often hard to succeed in reinsurance, as Buffett himself has noted. But the actions of Exor and others prove that there is value in reinsurance, even if it sometimes comes from an outside eye. ●

James P. Lynch, FCAS, is chief actuary and director of research and information services for the Insurance Information Institute in New York.

Innovation in the CAS BY SERHAT GUVEN, CAS INNOVATION COUNCIL AMBASSADOR

In October 2014, I had the distinct honor and pleasure of cohosting a webinar with the Innovation Council chairs on how innovation has influenced my career as a CAS Fellow.

We began that discussion by introducing some key pillars of innovation, as presented by Susan Wojcicki, author of *The Eight Pillars of Innovation*. I then spoke about how my experiences in the evolution of pricing sophistication mirrored these pillars. It was a great opportunity to briefly present some of the key ideas showing how innovation is embedded within our actuarial community. In this article, I want to expand upon some of the ideas presented in the webinar that really resonated with me.

Pillar 1. Never Fail to Fail

To me, this pillar has everything to do with having the courage to experiment beyond the familiar.

Said another way, failure is inevitable and acceptable if you learn quickly and apply the lessons learned from that failure. As Brian Tracy, the author of *How the Best Leaders Lead,* once said, "Move out of your comfort zone. You can only grow if you are willing to feel awkward and uncomfortable when you try something new."

Informally this pillar reminds me of my children's elementary school. One of the key principles that children are taught is that "failure leads to success." This echoes my own experience developing predictive models for two reasons:

A. **Predictive modeling is formalized experimentation.** In an analysis I start with a large set of variables and then wind up with a much smaller set of variables and interactions that correlate with the risk that is being modeled. I use statistical tools — all of which can fail — to assist in the analysis. I then supplement this with non-statistical tools such as consistency tests and business judgment. This is considered a standard way to model. But if you think about this procedure, it is really a rigorous approach to comparing a huge number of experiments, the vast majority of which don't make the final cut.

B. **The second perspective is much less technical.** Many models have been developed that were technically superior but ultimately fell short of expectations. The reason for their failure, however, had more to do with the culture and environment in which those models were deployed. Resistance to change is a common issue and, more importantly, there is an intense fear that new techniques will fail. Our challenge is to change that culture of resistance and fear through education, inspiration and experience.

Pillar 2. Strive for Continual Innovation, Not Instant Perfection

I spent about four years of my career in a data and systems unit that supported the actuarial division of the organization. One of my projects was to design the business requirements for the data warehouse that would support the analytics of the organization. In the beginning, I approached this role in a very meticulous and systematic way because, as an actuary and predictive modeler, I knew that identifying and fixing data issues would result in much better models. Of course, the early models my team developed identified even more data problems than before. At first, we would go back and fix the data before building more models. However, it became painfully clear that too much or too little time spent in data assembly would jeopardize the success of the effort. We recognized that the lift generated in building initial models with imperfect data far outweighed the inaccuracies. Ultimately, the output of the model was then used to determine what should be done now versus what could be fixed in future iterations. Modeling would never improve or evolve without a change in our attitude about the notion of perfection.

Pillar 3. Look for Ideas Everywhere

Our own actuarial literature is rich in insight on how different techniques can be used to analyze and model different risks. For example, much of the early literature in ratemaking form the foundation of how territorial risk analysis should be incorporated in a predictive model.

Note, innovation does not come prepackaged and is not beholden to the actuarial community. Some of the best models are enhanced by perspectives from other disciplines. Underwriters can provide guidance as to what to look for in underlying frequency models just as claims specialists create value by guiding the severity models. The culture of innovation encourages inclusion.

We should be open-minded on how sophisticated approaches and related disciplines help us better understand and quantify both risk and uncertainty.

Looking Back and Ahead

Over the past 15 years, it has become clear that the impact of predictive modeling has and will continue to have a significant influence over the insurance industry. Modeling allows us to more accurately identify and assess the underlying risk. This process would not have happened without innovation. The successful growth of predictive modeling and, to a greater extent, the growth of the actuarial practice requires a commitment to continuous innovation.

This requires us not to focus on what we can't do, but to center our energy and creativity on what we can do.

Serhat Guven, FCAS, is Americas P&C Sales and Practice Leader for Towers Watson in San Antonio, Texas. His first CAS volunteer position was as a candidate representative on the Student Liaison Committee in 1999.

EXPLORATIONS BY JOHN A. MAJOR AND MICAH G. WOOLSTENHULME

Introducing the Most Dangerous Model

Can financial models truly be dangerous? As complexity blossoms in the world's financial systems, coping with irreducible modeling uncertainty is a key challenge to good decision making. Generations have wrestled with minimizing risk through portfolio design and diversification, but important threats persist. They stem from the inevitable possibility that our models are in fact wrong.

Jon Hill[1] reminds us of two well-known examples:

1998: Long-Term Capital Management (LTC) assumed correlations based on history were a stationary process (Gaussian copulas, no tail contagion, etc.). They weren't, and the subsequent melt-down of their highly leveraged positions took LTCM down and almost the entire banking system with it.

2004-2007: Subprime mortgage bundlers assumed North American housing prices would keep rising forever, or at least be stable based on history. They didn't and they weren't. Massive global market meltdown resulted.

The U.S. Office of the Comptroller of the Currency[2] (OCC) defines model risk as "the potential for adverse consequences from decisions based on incorrect or misused model outputs and reports." Banking regulators have issued guidelines that models should be inventoried and validated, and that model risk warrants quantification and provision through reserves or margins.

Even the most carefully constructed models are subject to what actuaries call "parameter risk," the irreducible uncertainty in a predicted distribution. Is parameter risk a species of model risk? The OCC thinks so: "An important outcome of effective [model risk management] is a banking organization's demonstrated understanding of and accounting for such uncertainty. Accounting for model uncertainty can include applying … adjustments to model output."

So what is to be done if uncertainty remains despite our best modeling efforts? There are in fact two practical responses within reach of model practitioners, management, and industry analysts. The first response is to quantify the uncertainty, and the second is to design a strategy for robust decision-making that is relatively insensitive to the potential model error.

Let's call the model we use and believe the "baseline." We suspect it might not be exactly right, meaning that the relative probabilities it assigns to potential outcomes can differ from reality. Our initial approach is to conduct an uncertainty audit, where we develop standard errors or confidence intervals. This is a fine first step, but we haven't provided much actionable guidance to the decision maker.

The Bayesian approach is to modify the baseline by averaging (actually, mixing) over the model uncertainty. The modified model is then used to make decisions. In this way we treat uncertainty as another form of risk, and obtain concrete guidance for ranking decisions.

Since Ellsberg,[3] however, we know that most people are "ambiguity averse." To them, uncertainty and risk are different phenomena and should not be conflated. The neo-Bayesian approach, exemplified by Gilboa & Schmeidler,[4] is to locate all plausible models sufficiently "near" the baseline. We then make decisions that are robust: The likely outcomes are least painful with respect to the worst case model in the plausible set. Specifically, one constructs utility functions to represent the value of decisions. Map each decision option to the plausible model that possesses the worst expected utility. Then choose the decision option that offers the best mapped utility, i.e., the maximin.*

The maximin approach requires a way to measure the plausibility of alternative models and a specific threshold value. One popular metric is relative entropy.[5],[6] If $p(x)$ is the baseline model's probability density and $q(x)$ is the alternative, then the relative entropy is defined as the expected value of $(q(x)/p(x)) \cdot \ln(q(x)/p(x))$. If the plausible set is defined by a bound on relative entropy, the most adverse model for utility $U(x)$ takes the form $q(x)=C \cdot \exp(-k \cdot U(x)) \cdot p(x)$. This expression is the familiar Esscher transform.

However, there are problems. The usual interpretation of entropy is

* The maximum of a set of minima.

information, and it is difficult to gain or communicate intuition about a plausibility bound denominated in bits. Also, plausible alternatives can include models putting zero or near-zero probability on scenarios that the baseline considers quite possible.

More fundamentally, there is the problem that one must choose a bound at all. It ends up being arbitrary, like the choice of VaR thresholds in capital requirement standards.

A solution to these problems is presented in our recently released working paper, "The Most Dangerous Model: A Natural Benchmark for Assessing Model Risk."[7] If we know (or assume) the number of observations upon which the baseline model was built and treat it as if it were a perfect representation of the data, we can define plausibility in terms of the likelihood ratio. The interpretation is then straightforward: Alternative q is considered plausible if the underlying data is at least $y\%$ as likely to have been generated by q as by the baseline.

The worst plausible models are no longer defined by the Esscher transform, but the solution is just as easy to compute: $q(x)=C\cdot p(x)/(k+U(x))$.

But there's more! If we further assume that p and any alternative q were considered equally plausible before observing the empirical data, we have a 50-50 prior, which, when combined with the likelihood connection between p and q, permits computation of Bayesian posterior expected utility. Essentially, we compute a credibility-weighted average between the baseline model p and any (single) alternative q. The question then becomes: Which alternative q has the worst posterior expected utility? This is the worst credible model, a.k.a. the Most Dangerous Model (MDM). It is a naturally occurring object, not requiring the specification of an arbitrary plausibility threshold.

Finding the most dangerous model is a simple one-dimensional search problem, and it can be organized in a spreadsheet. When financial decisions rely on estimates marked to model, identifying the MDM can be a critical exercise in quantifying uncertainty and designing robust strategy.

Details and a reinsurance purchase case study can be found in the working paper.

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The authors work for Guy Carpenter & Company, LLC. John Major, ASA, is director of actuarial research and Micah Woolstenhulme, FCAS, is managing director of ERM advisory.

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Update on the Risk Assessment Database 2014

BY DAVE CORE, CAS DIRECTOR OF PROFESSIONAL EDUCATION AND RESEARCH

RAD, or the Risk Assessment Database, is a wide-ranging analysis of the theory and empirics of risk assessment in property-casualty insurance.

Formerly known as the Risk Premium Project II (RPP II), RAD was initiated by the Committee on Theory of Risk (COTOR) and began in 2000 with RPP I, which was a review of the actuarial and finance research done to that date. In 2010 RPP II was conducted to extend the research findings from RPP I, primarily due to the vast development of research in finance and actuarial science during the last decade, but other challenges for future research were also identified. Martin Eling and Hato Schmeiser took on the RPP II project in 2010. COTOR contracted Eling for subsequent updates annually from 2012-2014. Eling submitted the 2014 update in May 2015, which encapsulates of his findings from the previous year.

Eling conducted the RAD 2014 update during December 2014 and March 2015, adding 96 new qualified papers into the RAD literature database. These additions stem from a thorough search of new literature conducted by researchers at University of St. Gallen in Switzerland. Other additions of papers and research reports were recommended by the CAS and COTOR members. The search methodology was based on the literature search strategy and results evaluation process used in RPP II.

More in-depth information on the current update as well as access to the RAD database can be found on the CAS website.

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RESEARCH UPDATE BY DAVE CORE, CAS DIRECTOR OF PROFESSIONAL EDUCATION AND RESEARCH

Costs of Holding Capital Project Extension and Expert Review Update

The Committee on Theory of Risk (COTOR) issued an RFP in 2012 for a report to advance understanding of the concepts and practical methods of calculating the capital costs appropriate for lines and sublines as presented in the Management Summary and Thematic Category of the research, "Allocation of Capital." Researchers George Zanjani and Daniel Bauer, from Georgia State University, completed that initial report titled, "The Allocation of Costs of Holding Capital," in late 2014.

Upon completion of the primary report, COTOR determined that subsequent research was needed to take the findings further. COTOR contracted with Zanjani and Bauer again to continue work on their report, with the goal of generating comparable results for more conventional property and casualty lines. In addition to securing suitable data and adjusting the parameters to corresponding data, Zanjani and Bauer will explore extensions of the theory. The final report, "An Extension/Adaptation of the Project on the Allocation of Costs of Holding Capital," is expected to be completed in 2015.

In view of the extensive theoretical development in the project paper and the extensive computer generated examples of allocation methods in MATLAB, COTOR also recommended having outside experts under a contract with the CAS to perform a detailed review of those two parts of the project report. (MATLAB or matrix laboratory is a multi-paradigm numerical computing environment and fourth-generation programming language.) Researcher Kailan Shang was contracted to undertake this expert review. Shang completed the review and submitted it to the primary researchers, Zanjani and Bauer, and to COTOR early in 2015.

Working Party Releases Report on Low Interest Rate Environment Issues Faced by P&C Insurance Companies

The CAS Low Interest Rate Environment Working Party, chaired by Chris Gross, ACAS, has issued a report exploring issues related to the current environment of historically low levels of current interest rates, the purpose of which is to uncover and communicate potential problems before they occur. This new low interest rate environment poses challenges to the property-casualty (P&C) industry, both with regard to income statements (reduced investment income if rates stay low), as well as the strength of balance sheets (market value of fixed income assets will drop if rates return to more normal levels). The Working Party's report addresses questions related to insurance pricing policy, investment strategy, risks to solvency, use of debt and long-term impacts, among other issues.

Exploration of the topic led the working party to the following five conclusions:

1. The low interest rate environment puts pressure on profitability but companies are generally able to respond appropriately with regard to pricing of insurance products.
2. P&C insurance liabilities give some evidence of inflation sensitivity, which is potentially an important consideration if interest rates and inflation move together.
3. If interest rates were to return suddenly to the higher historical levels, balance sheet problems could emerge for some companies.
4. The risk of widespread solvency problems due to a sudden rise appears low.
5. The largest companies appear to be behaving more conservatively compared to some smaller competitors.

To read the report in its entirety, see the online CAS *E-Forum*, Summer 2015.

Böhme to Take on Cyber Risk Task Force Project

Professor Rainer Böhme of the University of Innsbruck will lead the CAS Cyber Risk Task Force research project titled, "A Fundamental Approach to Cyber Risk Analysis and the Research Agenda for Cyber Insurance." Dr. Böhme is an IT and cybersecurity expert with a strong statistical background and is the author of a number of publications on cyber insurance and financial consequences of cyber risk.

The final research project will provide an overview of the existing research most relevant to the analysis of cyber risk for cyber insurance. It will propose a general approach and methodology for cyber insurance modeling and build on the previous research by Dr. Böhme and the latest developments in cyber insurance and cyber risk modeling research. The report is scheduled to be released later in 2015.

Rainer Böhme

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IN MY OPINION BY GROVER EDIE

Corporate Actuary Versus Consultant — A Comparison

If you read the "Comings and Goings" column, you may have noticed that I have a new job. This time, I went from a corporate environment to a consulting firm.

Upon reflecting on the differences between corporate life and consulting life, I wanted to share my thoughts with you. For those of you who have only worked in one setting, this will give you some insight into what the other side is all about. When I took my first job as an actuarial assistant in a company, I used to wonder what it would be like to be a consultant.

This is the second time I have been employed as a consultant. Some things have changed, others have not. The majority of my years in the profession have been at companies, except for a few years at the Insurance Services Office.

Project Focus Versus Process Focus

Work is more projects-focused at a consulting firm — get the task completed and delivered to the client. Timeliness and presentation are vital.

At a company, things are more process-focused. There are projects, but most of the work is repetitive (quarterly loss reserves, annual rate review for a line/state, etc.), and so the process of getting it done is important. Time spent today to streamline the process will pay returns the next time you, or someone else in the department, does the task. Since the amount of work often exceeds the current workforce capacity, this investment is usually worthwhile. Timeliness and presentation are still important, but many corporate actuaries do not give these two aspects of the product the necessary attention.

Documentation

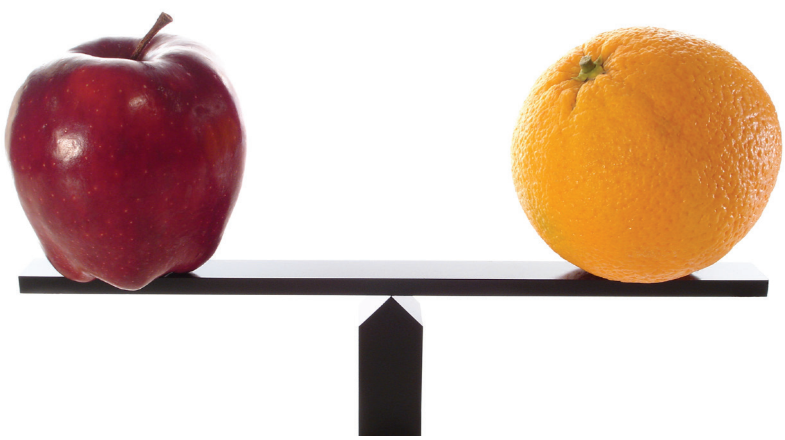
The documentation is different for a client than the documentation you do as a corporate actuary. Both need to be clear, concise, comprehensive and correct. (The 4 Cs on documenting.) Both need to be in compliance with professional standards. But there is a slightly different twist to each.

In a corporate setting, you are usually available to answer questions. Certain terms that have company-specific meanings are understood by both the corporate actuary and others within the organization to have that same meaning. You might not have to create a glossary for the reader, since all the recipients have the same definitions of the terms involved. Oftentimes, the documentation for a given analysis, as well as its report, is simply kept up-to-date rather than re-invented and re-published at each successive update.

Since someone else in the department might be updating the work the next time it is refreshed, the documentation, at a minimum, needs to be sufficient to enable another person to do it. If not, it needs to be documented sufficiently so that someone else in the department can do it.

While corporate actuaries usually work in the same physical location as the recipients of their work, consultants are usually not local to the client; therefore, a consultant's work needs to speak for itself. There are some controls on whom may see and use a consultant's report, and it is usually within the confines of the client company. But the report can be copied multiple times for multiple readers, many of whom will not be a part of the original work group or project team.

As a consultant, you likely will not be present when your work is reviewed



by the client, so it needs to be clear, concise and well-documented.

A consultant will likely need to create a glossary for the client, so that the client knows how the consultant interpreted the data and data elements. The report needs to be conveyed in a manner where both the analysis and the audience have the same definitions of the terms involved.

Travel

The amount of travel depends more on the organization than whether it is a company or consulting practice. But both as a corporate actuary and a consultant, I found that travel tended to be uneven: a lot for a while, then no travel at all for a while. It doesn't seem to be evenly distributed throughout the year or even evenly distributed year to year.

Scheduling and Deadlines

You do not control deadlines in either position, but since company work tends to be more process-oriented, scheduling and deadlines tend to be more predictable. Consulting deadlines are set by the client.

People With Whom You Network

In a corporate setting, the network is more contained and relations tend to last as long as you remain with that company. You see the people with whom you work, and for whom you do the work, nearly every day.

In a consulting environment, you are more likely to deal with a rather wide group of clients you likely do not know as well as you know your coworkers. Since much client work is project based, you don't interact with them as often as you would a coworker in a corporate setting.

Take out the time spent in meetings, fighting fires, answering other people's questions, etc., etc., and see just how much time you have left to do "your work." You will be shocked.

Data

I forgot how difficult data was for a consultant until I went back to work as one. A consultant has to use what data the client provides, which is often incomplete and without clear definitions.

Since much of the consulting work is project based and many times the projects are one-time events, there seems to be no incentive for the client to put the data in a format better used by the consultant. (Although the client who asks the consultant "What data do you need and how do you want it?" will have lower consulting bills, since the consultants will be more efficient and thus bill less.)

On the other hand, the corporate actuaries usually have much more control of how they get their data, if not initially, then eventually.

Keeping Track of Your Time

Many of the articles and books on time management tell us to keep a detailed log of what you do and your start and stop times for those tasks. One company I worked for kept track of all of the work through work logs. See "Should We Be Agile?" *Actuarial Review*, August 2012.

In that corporate setting, the work log really helped with workload analysis. It also helped me and others realize just how little time is available to do "actuarial work." Take out the time spent in meetings, fighting fires, answering other people's questions, etc., etc., and see just how much time you have left to do "your work." You will be shocked. Years ago when I went from consulting to a corporate position, I was surprised to find out just how little time I had to do "my work." Meetings and supervisory responsibilities absorbed a large proportion of my workday.

As a consultant, you are forced to keep track of your time. I recommend that you do that occasionally as a corporate or governmental employee. You might be surprised at what you learn about how you are spending your time.

Peer Review

As chief actuary in several corporate settings, I had trouble getting others to understand the value of peer review. Usually, the issue was with senior management, who would ask "Why can't you do it right the first time?" or "Why not have everyone check their own work?" The actuaries I worked with understood the need for peer review, as do the ones I work with now. Fortunately, in a consulting environment, peer review is almost second nature. Peer reviews ensure correctness, of both accuracy and presentation, which is vital for a consultant.

I have enjoyed working in both environments and hope I have given you some insight into some of the differences. Probably the biggest difference is the variety that consulting offers over a corporate setting.

IT'S A PUZZLEMENT BY JON EVANS

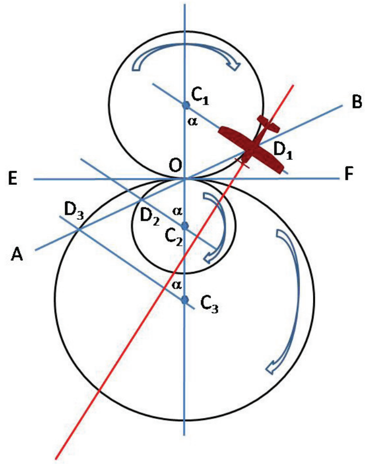
Buffon's Sphere Inside a Triangulated Honeycomb

Here is a three-dimensional twist on the famous Buffon's Needle Problem. Suppose all of space is filled with a tetrahedral-octahedral tessellation (or honeycomb). This is a space-filling structure composed of alternating regular tetrahedrons and regular octahedrons, where all edge lengths are equal to a constant L. Every face of a tetrahedron is congruent to the adjoining face of an octahedron, and vice versa, but there is no overlap of volume. Suppose a sphere with radius R materializes at a random point in space. There is a 50 percent probability that the sphere lies entirely within a single polyhedral cell and does not intersect any of the faces of the polyhedrons. What is R/L ? Can you determine the probability that the sphere will materialize entirely within a polyhedron for all values of R/L?

Aerial Dogfight Rematch

An extra credit follow-up was suggested by David Uhland for the puzzle pitting the Red Baron against Snoopy in a turning dogfight after a near-miss flyby. In the original puzzle, whoever had the tighter radius of turn won, making Snoopy the winner both times. For extra credit, the Red Baron and Snoopy both turn hard right after the near miss — instead of hard right and hard left, respectively, as was the case in the original puzzle. The winner in this case will be the airplane with the highest rate of angular turn, or v/r, where v is speed and r is turning radius. Since $r = v^2/a$, where a is turning acceleration, the angular rate of turn is a/v. In the first case, where the Red Baron has twice the speed and three times the turning acceleration, his angular turning rate is 1.5 times that of Snoopy's, and he wins. In the second case, where the Red Baron 0.9 times the speed and 0.75 times the turning acceleration, his turning rate is 5/6 that of Snoopy's, and therefore Snoopy wins. To show why angular turning rate determines the winner in this case, John Robertson constructed the following geometrical figure and explanation.

The diagram shows that the plane that gets around its circle first wins. The idea is that if a plane has gone a certain proportion of the way around a circle, then its laser attacks a point that is a smaller proportion of the way around the other circle, whether that circle is larger or smaller. In the diagram, angle BOF is the congruent to angles EOD_2 and EOD_3. By standard theorems about



chords of circles and angles, the angles OC_1D_1, OC_2D_2, and OC_3D_3 are congruent, each being twice the size of angle BOF. This implies that lines C_1D_1, C_2D_2, and C_3D_3 are parallel. The red line is the laser from the plane. Since the red line is tangent to the circle in which the plane flies, it is "outside" the line AB. Therefore the plane that gets around its circle faster hits the other first, since it has to have swept the other plane with its laser at some point, but the other plane's laser could not yet have hit it, as the other plane always hits a smaller arc around the winning plane's circle than the arc corresponding to the position of the winning plane. Solutions were submitted by Raymond Chiang and Tom Manderachi. ●

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