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THE
redesign
OF THE
actuary



PRESIDENTIAL ADDRESS

The redesign of the actuary



by Sam Gutterman
 Address at the Annual Meeting
 October 28, 1996
 Orlando, Florida

Change. Sometimes mild. Sometimes radical. One thing is certain. Change characterizes our world. In fact, we will live with change the rest of our lives. Dealing with it, as professionals and individuals, will challenge us. My focus today is how current and future actuaries will have to react to it. Updating the definition of an actuary

During the past year, I have been frequently asked what an actuary is. The dictionary answer defines us by the type of technical work we performed in the insurance industry many years ago. For a general audience, I think the following definition describes us well:

An actuary is a professional trained in mathematics who applies a knowledge of probabilities and statistics in financial matters related to individuals or organizations. For instance, actuaries use their skills and knowledge to determine the cost of insurance and employee benefits and to measure the economic consequences of uncertain events.

For actuarial consumption, I prefer a more complete, more subtle version: An actuary is a professional who identifies and analyzes the implication of future possibilities, especially with respect to risk. In conducting

this analysis, the actuary develops one or more models to estimate the financial impact of future uncertain events. The models may reflect the decision-maker's objectives and risk tolerances, reflecting explicit assumptions based on:

- Historical experience from similar types of exposures or related phenomena, and
- In-depth knowledge of the environment in which the future experience will occur, which may differ from the environment from which the data were obtained. This knowledge enables an actuary to assess:
 - The relevance, reliability, and credibility of available historical or related data
 - The sensitivity of the models to changes in assumptions and model specifications, resulting in an assessment of a range of model results over a single or multiple potential scenarios.

To enable the decision-maker to effectively operate in an environment of risk and uncertainty, an actuary interprets the results of these models so that practical alternative approaches can be developed to manage future outcomes. Because of the difficulty of predicting future contingent events and their consequences, these approaches are often dynamic.

Periodic evaluations of emerging experience and prospects for future change are required to enable an actuary to appropriately modify his or her estimates or to more appropriately manage the risks undertaken.

Profession's scope needs to be marketed. Whatever definition you prefer, the profession's scope is much broader than is generally recognized. Two important strategic issues for the profession are related to this:

- 1) Marketing this enhanced scope outside of the profession
- 2) Preparing the actuary to satisfy this "job description"

Those who have heard of our profession assume that actuaries are highly quantitative and deal with numbers all day. In my experience, actuaries are more involved in business issues that happen to benefit from logical and mathematical methods. Such work does require a sound quantitative base.

But today, that's not enough. Actuaries need a sound approach to financial model building, the ability to manage a project and the people working on it, the ability to communicate results, and the ability to work jointly with technical and non-technical professionals from other disciplines.

As A.H. Bailey, a British actuary, said in his 1880 Presidential Address to the Institute of Actuaries in London: "An

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actuary must be a mathematician, but a mere mathematician will be a very incompetent actuary.”

One thing is certain. Our profession's scope is much broader than is generally recognized. But how do we prepare the actuary to satisfy this bigger “job description?” How do we communicate this enhanced scope outside the profession? These are strategic issues for the profession to tackle.

Several actuarial organizations are pursuing the strategic issue of marketing, but those efforts are loosely focused. Now is the time for the profession and the Society of Actuaries to take action and commit significant resources for programs that promote a positive, clear, and broader image. We must ensure that actuaries can respond to the “Ask an Actuary” campaign Walt Rugland spearheaded a few years ago. How we accomplish this — or rather, how we prepare the actuary to meet this new job description — requires a “redesign” of the actuary. What do I mean?

In general, actuaries have a set of sound skills and approaches to problem-solving, including our ability to rigorously pursue all implications of an issue. This is partly developed by surviving our rigorous education and examination system. I refer to these skills as the actuarial platform. Most of us share this platform, regardless of our practice area. How we apply it today defines us as actuaries. This is true even if we no longer consider ourselves involved in technical actuarial work.

How we apply it tomorrow will determine how the profession evolves. I am referring to a redesign that will allow us to change, but also to retain our existing strengths. Dramatic changes in business make redesign necessary. Let me describe some of the major changes we are experiencing, because they are the reasons for the need for our redesign. They affect all areas of actuarial practice.

Technology has provided more opportunities than disadvantages. It has given us improved access to data and research, the ability to provide a better service or product, and the potential to expand beyond our current professional scope. A year ago, an article in *The Wall Street Journal* asserted that technology would eliminate the need for actuaries because the computer would do much of our work, which it characterized as number crunching. Don't believe it! In fact, technology really should allow us to do our work better and expand our scope.

The broadened scope our profession aspires to is already populated by others. They understand their turf, and this won't make our expansion — or our response to change — easy.

We constantly hear about the *consolidation of the industries we work in and with*. This may hurt some in the short term, but at the same time, it presents opportunities as the need for sound business advice increases even more.

A greater long-term threat, I believe, comes from *increased regulation*. The need to comply with new rules may boost our short-term employment. However, if we are content to serve our clients by simply satisfying regulatory or legal compliance requirements, our customers will perceive us as necessary evils rather than as value added professionals. Such an environment also diminishes our incentive to provide creative, proactive value. Ultimately, the vitality of our profession, our influence, and our scope will diminish if we concentrate too much on compliance work.

Today, *we are not the only profession to address business risk*. This is even true in the insurance industry, where

we once monopolized risk assessment activities. Others now also rigorously address risk. The new so-called financial engineers are just one example, although they have taken a relatively narrow approach of solving risk-related problems only through the use of derivatives.

The reality is that the broadened scope our profession aspires to is already populated by others. They understand their turf, and this won't make our expansion — or our response to change — easy. However, if our ideas remain unmodified and if we do not apply and expand our actuarial platform, others will overtake us, even in our traditional domain.

It will not matter that our solutions are “right” if they aren't well *communicated*. In other words, we cannot assume that our actuarial black box solutions will not be challenged. In the past, ivory tower solutions were tolerated; now, they are a turn-off. Other voices will recommend practical solutions or, alternatively, develop more technologically advanced ones if we don't do it first.

Business is now *global*. This trend will not affect every actuary's work. However, think for a moment. The future public we serve may be in another country. Our employer or client may be from another culture. Our fellow team member may have grown up in another country. Knowledge of your own practice may be sufficient today, but not necessarily tomorrow. I have learned in my international travels for the Society that, even though other countries have different techniques and approaches to problem solving, the issues are similar throughout the world. We must be knowledgeable about the international environment, because our competition may not be whom we now expect.

Our *business environment is changing*. Company consolidations have reduced the number of organizations, while opportunities for new clients have increased. Dividing lines between industries are blurring, whether they include hospitals for health actuaries or



other financial institutions for life or finance actuaries. Management fads such as strategic business units, re-engineering, and quality management also impact the size, shape, and structure of actuarial areas. Peer support groups may not be as available as they once were, and the ability to hire more actuaries may be changed.

More frequently than ever, actuaries are working in *multi-disciplinary situations* where seeing the big picture and identifying problems are essential. New attributes for a new era. All of these changes are here today, and they must be addressed by a redesign of the actuary. What should this redesign consist of? It should encompass attributes that will allow actuaries to address change and overcome challenges.

Let me describe these attributes.

1) *An ability to identify risks.* The first step in risk assessment is the identification of significant risks.

2) *An ability to identify opportunities.* Too often we focus only on risks. We must also focus on opportunities and how to take advantage of them. I still see actuaries who either don't address the significant underlying issues of a problem or treat these issues as if they were someone else's problems. Perhaps they feel the issue is outside their job description. The redesigned actuary, however, will rewrite this job description.

Though we are always asked for unique answers, we must educate others to the fact there is more than one probable future.

3) *An ability to apply unstructured problem solving skills and to be intellectually curious.* After identifying a risk or opportunity, we must adapt new techniques and approaches to address them. We can't just extrapolate; we must anticipate change. In addition, and possibly more important, it isn't enough to ask how — we must also ask why, and what other alternatives exist.

4) *Maintenance of both a long-term and short-term perspective.* Historically, this has been one of our strengths; we can't lose it in the midst of our redesign.

5) *An ability to construct realistic actuarial models and apply them to derive practical answers to business problems.* The wisdom to learn from past experience is an actuarial strength, but we must realize that the future rarely replicates itself. We are experts in the use of discounted cash flow techniques; we need to expand and further improve their applications. This realization will result in the use of more dynamic models and follow what the Australian actuaries describe as the actuarial control cycle.

6) *A willingness to examine alternative scenarios.* We cannot predict the future. Although we are always asked for unique answers, we must educate others to the fact that there is more than one probable future. In order to assess the financial implications of risks and opportunities effectively, it is desirable for us to develop multiple scenarios, to demonstrate their impacts, and what can be done about them.

7) *Recognition that most problems don't have black and white solutions.* In fact, most problems usually involve various shades of gray. We have been taught to weigh both the advantages and disadvantages of alternative solutions. While we cannot lose this approach to problem solving, at the same time we can't freeze and not make any recommendations or decisions at all.

8) *Need to take advantage of technology, but not be controlled by it.* We must use technology to help create new opportunities and insights, but not be driven by it. Technology is a tool, and not an end all by itself.

9) *Application of known models to new problems and identification of new methods for application to existing problems.* For example, we must become more familiar with applications of financial economics. The new financial textbook the Foundation will publish and distribute to actuaries will serve us well.

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The new Presidential Award program, instituted by Sam Gutterman at the annual meeting, honored four individuals at the Board of Governors dinner at EPCOT Center in Orlando. Two honored were Bob Myers (left), former chief actuary of the Social Security Administration, for his public service; and Bern Bartels, (right) SOA exam registrar for 25 years, and bell ringer at 100 SOA meetings. Other honorees were Paul McCrossan, for his work to establish the International Forum of Actuarial Associations, and the late Edward A. Lew, for his contribution to actuarial research and modeling.





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10) Sound research skills. We will increasingly access both actuarial and non-actuarial data and studies. Although the Society will continue to enhance our own strong research program, we will also have to learn to look to the results of others as well; we don't have a monopoly on knowledge.

11) Need to go beyond what is required. We will have to perform more than just a compliance function to be of long-term value to our employer or client. We have to add business value.

12) Communication to the users of our services in their language. We really need to substitute facts for impressions. Facts in this context do not necessarily mean a single answer to a problem, but rather more complete information and analysis to help others make informed decisions in language they understand. Focus on significant macro issues, rather than refined solutions to micro issues, should highlight our contributions.

13) Confidence in our ideas and proactive pursuit of them. In addition to our fundamentally sound quantitative approach, I believe actuaries have been successful because of an in-depth understanding of our environment. We know more about our current practice

areas than anyone else. The emphasis in our new education process will be on more generalized problem-solving approaches that use a wider scope of methods and techniques. At the same time, we must combine this with an in-depth knowledge of our environment. This means we must continue to be on our toes.

The results of our education redesign project will further the work of the actuary and the worth of the actuary, as well as the public perception of the actuary.

14) Professionalism. But most of all, it is very important to be a professional, by acting with personal integrity in the public interest. For those who have gone through a Fellowship Admissions Course, you need to continue to practice what you learned there throughout your career. For those like myself who have not, I encourage you to think long and hard about what it means to be a professional, and to act accordingly.

The SOA's role: Help us manage change. Here is what the Society of Actuaries should do. Let's start with our investment in aspiring actuaries. This year marks the Society of Actuaries' 100th anniversary of offering professional education and examinations.

Our educational redesign structure, which the Board of Governors

approved on October 27, is all about renewal and commitment to, and investment in, our profession's future.

If implemented according to plan, it should increase the value of future actuaries and broaden our profession's scope. It will be a significant milestone. This redesign should continue our tradition of excellence that we are known for around the world. I broadened my personal scope by studying both life and casualty actuarial examinations. That has better prepared me to tackle different business problems. Although my personal education formula is not for everyone, it is an example of a continuing education plan current and future FSAs should develop.

We need to do everything we can to help actuaries break out of their cubbyholes.

In fact, in a recent telephone survey of randomly selected SOA members, a significant percentage favored compulsory continuing education for the profession. I think we should explore this issue further. This response suggests that actuaries recognize the importance of continuing education in times of change. How high should the bar be set to keep actuaries up to date?

At the same time, we need to expand our continuing education offerings considerably in the future, both in traditional areas of interest and in others. We need to do everything we can to help actuaries break out of their cubbyholes.

With respect to our research, I also believe we should expand our invited papers program and encourage more submissions on a variety of significant topics. We should focus on developing new techniques, broadening our set of applications, and adapting those developed in other fields, such as financial economics, biostatistics, and investment modeling. We must also market our knowledge and our research better.



President Sam Gutterman (seated on floor) celebrates with new Fellows at the Dallas Fellowship Admissions Course in March. The 1996 spring crop attending this FAC and the one in Atlanta yielded 170 new Fellows; the fall FACs in McLean, Va., and Toronto added 165.



We have begun this process with the publication of our new journal, the *North American Actuarial Journal*, and our visibility on the World Wide Web.

We also have to make sure we stay outward focused on a proactive basis, and not just inward looking. If we don't pay attention to our customer, we may find we are just talking to ourselves.

We have talked a lot about expanding our profession's scope. I've seen early signs that our efforts are succeeding. For example, our new finance and investment education tracks are excellent. Now, we must help find opportunities for our graduates in these areas. We must work with university professors and recruiters, among others, to increase and broaden the placement of actuaries. We must promote our positive image. We need to broaden our employment opportunities, so the redesigned actuaries can do their thing. We can only keep their loyalty if we prove that we can help and actuaries become recognized as value-added professionals. Too many qualified young actuarial candidates leave the profession. The profession needs to keep them. We can only do this by relevant and valuable education and research. They need to be proud of becoming an actuary.

Create your own plan, making it flexible enough to respond to your changing needs.

Our role: Growth is up to us. Now the remaining question is, "What should you do?" The Society of Actuaries can only contribute so much toward helping to redesign the actuary. Ultimately, it is your responsibility to improve your skills. Take a long, hard look at yourself. What attributes do you need to better satisfy the real needs of your employer, boss, or client? How can you keep up with changes affecting you and your practice area? What additional knowledge will you need? What

type of continuing education should you pursue?

I challenge you to take this initiative. Create your own plan, making it flexible enough to respond to your changing needs. Reach out and spread your wings! Go for it — redesign!

Closing remarks

I would like to conclude by saying thanks to those who helped me survive and enjoy this past year as your president. First on my list is my family — Peggy, my wife; Jordan, my eight-year-old son; and Zoe, my six-and-three quarters-year-old daughter. I would also like to recognize my parents. I am fortunate to have them both here with me today.

Second on my list is the SOA staff and our many volunteers. John O'Connor assisted me tremendously, as he has for 16 previous presidents. His loyal and hardworking staff have been a pleasure to work with. The Society is involved in an amazing number of activities, and the quality of their performance has not been compromised. Together with our many volunteers, they clearly make things work.

In my first speech as your president-elect, my major theme was the need for more actuarial champions. I have met many these past two years. They certainly know who they are. I sincerely thank you for your service, your passion, and your contribution. In many cases, it



Past President Steve Radcliffe (kneeling) asks Jordan Gutterman, son of President Sam Gutterman, how he felt when he saw his dad in front of all these people. His response, "I felt good," brought smiles from mother Peggy and sister Zoe.

is a labor of love. I can only urge you and others to continue to expand your efforts as champions.

I would also like to thank my employer, Price Waterhouse, for putting up with my "high priority" SOA projects.

But most of all, I would like to thank you, the members, for giving me the opportunity to be able to experience such a challenging and rewarding period of my life. I hope that I have fulfilled a small part of your faith in me.

Thank you.



Sam Gutterman transfers the Presidential Medal to the 1996-97 President David Holland (left), sealing the pass-off with a high-five.

