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Welcome to the *Innovators & Entrepreneurs* special edition

By Carlos Fuentes

Selecting the articles for the present compilation was not easy. Each piece offers something unique and useful. It gave me certain pleasure to re-read them all. They are short writings with pearls of wisdom that can be tackled in a few minutes. I have also enjoyed the closeness with authors and members of the Entrepreneurial & Innovation Section. Much good has come from the associations formed over the years. I hope you have the time to read the compilation. If you like it, look for more articles on our Section's webpage, where you can also find resources and a list of members that are actively engaged in the profession.

ARTICLE DESCRIPTION

1. "**Interview with John M. Bragg (Jack)**"—Originally published in the May 2017 issue. Did you watch A Beautiful Mind? What do you know about the origin of the Sections of the SOA? What do you know about the history of the enrolled actuary exams? What do you think is the future of the actuarial profession? You'll find answers to these questions and a few surprises in this inspiring interview of John Bragg, who, in his mid-90s, remains very engaged in his actuarial work.

2. "**Becoming a More Effective Innovator**"—Originally published in the August 2016 issue. Innovation has become a fashionable concept, but what does it really mean? Are the concepts of innovation and invention synonyms? Is innovation a good thing? If so, why do so many oppose it? If we want to become innovators, what considerations should be kept in mind? Are there examples of innovative thought in the actuarial field? Can you name a few? If you want answers to these questions please read Jay Jaffe's article.

3. "**Should I Get an MBA in Addition to an FSA?**"—Originally published in the August 2016 issue. Does it pay to get an MBA after becoming a credentialed actuary? Opinions certainly differ and the answer depends on the circumstances of each specific case, but Mark Spong guides our thinking in his thoughtful article, where he systematically examines the issue.

4. "**Strategy, A Historical Overview**"—Originally published in the November 2015 issue. What is the most important factor for corporate success or failure? Most experts agree: strategy. The premises of this article are: (i) Much can be learned about business strategy by understanding military strategy; (ii) There are no shortcuts to learning how to think strategically, notwithstanding the proliferation of express courses and airport books; (iii) The rewards of thinking strategically are ample.

5. "**Business Meets Academia**"—Originally published in the November 2015 issue. This article describes how academic principles, disruptive forces and psychology were the key forces for the creation of a startup.

6. "**The Evolving Venture Capital Debate**"—Originally published in the November 2014 issue. When the author looks at the pros and cons of venture capital, it is with a fresh, nuanced, non-mainstream perspective. Isn't seeing "old" problems through a new, innovative perspective what an entrepreneur does? There is no mystique to being an entrepreneur, just a requirement that the individual applies his own experience and intelligence to a problem. We have all been entrepreneurial at times!

7. "**New Year's Evolution**"—Originally published in the February 2014 issue. The author describes an initiative undertaking by the Institute and Faculty of Actuaries (IFoA) in the United Kingdom to analyze the opportunities for actuaries outside the traditional areas of practice. UK actuaries hope to gain insights into the skills and training that could help them compete in new areas with other professionals–a battle in which we have not been successful in the United States.

8. "**Repeating Entrepreneurial Success**"—Originally published in the February 2014 issue. The author muses on certain aspects of an entrepreneurial career, specifically on how to hire new employees and on the advantages of documenting how work is done. You'll find some of these hiring methods unorthodox, yet for this entrepreneur they have been better than traditional approaches–who can argue with success? What about documenting how work is done? Most people say it is important but few take the time to do it. It seems that large companies can learn a thing or two from entrepreneurs. ■

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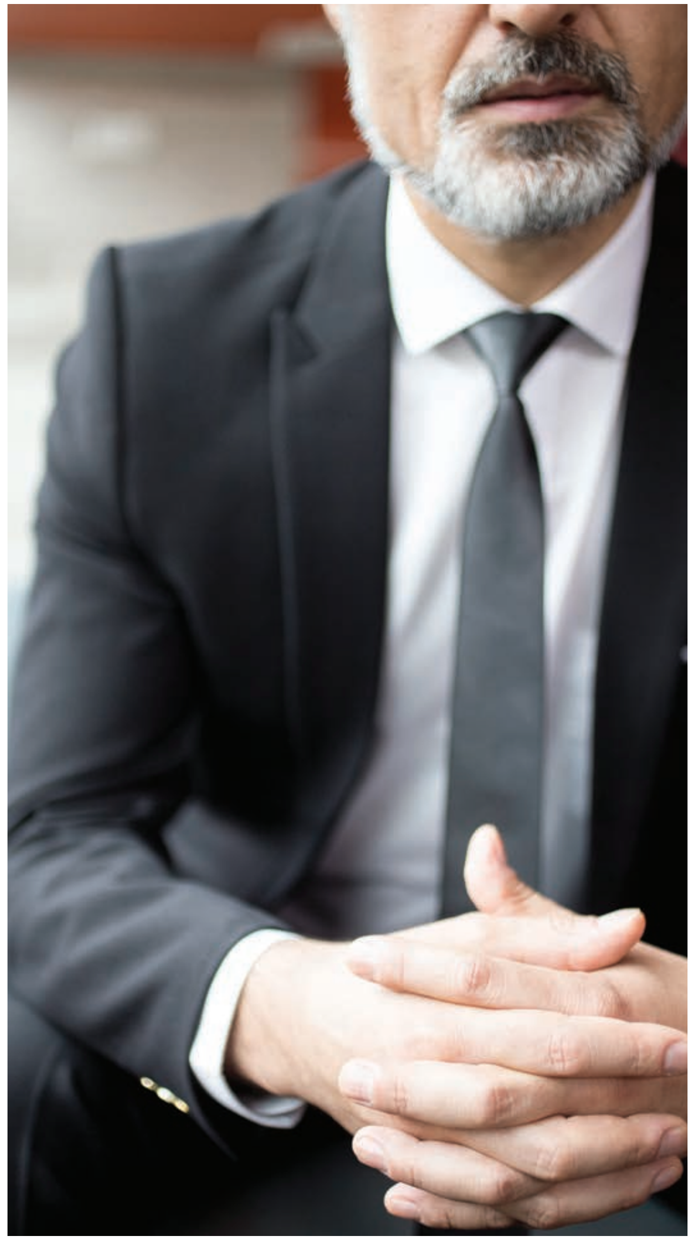
Interview with John M. Bragg (Jack)

By Carlos Fuentes



This is a special interview with an accomplished actuary. In addition to an outstanding career, John M. Bragg managed to serve the profession as president of the Society of Actuaries, developed technical tools, material for examinations, wrote award-winning articles and made many more contributions. A Renaissance person, his interests include physics, water-color painting, music, history and more. Now in his mid-90s, Bragg is about to publish his important article "Human Health Based on Quantum Mechanics—and the resulting New Health Contingencies," which no doubt the actuarial community will read with interest. We are honored to have the opportunity to interview such an accomplished actuary.

1. You have enjoyed a long and successful actuarial career. Can you tell us why you decided to become an actuary?

   "First of all, I want to congratulate the section for its good work and for giving me this opportunity to be interviewed!

   "At age 19, I was a physics major. But a miracle happened on the front steps of the arts building. I was suddenly recruited for life into the actuarial profession! I haven't seen a dull day since. I was impressed by the thought that I could become a professional in this important developing field which deals with the real needs of people."

At age 19, I was a physics major. But a miracle happened … [and] I was suddenly recruited for life into the actuarial profession.

2. Can you give us an overview of your career, emphasizing milestones and experiences that helped you succeed?

   "There have been many milestones. Just one of them was moving to the United States in 1956. (My wonderful wife, Joan, had said 'what are you waiting for? The bags are already packed!') The move immediately put me into the center of all things actuarial. The experiences gained with my two insurance companies (Great West Life and Life of Georgia) were absolutely vital in teaching me how to do things right. They got me a lot of consulting work later.

   "Coping with inflation was an early milestone, leading to the 'Cost-of-Living Policy' and my 1986 book Protecting Against Inflation and Maximizing Yield. Then, smoking/nonsmoking differences came along and led to tremendous success with the 'Bragg Life Tables—BLT's, 1981—2013.' Policy form approval was also big and was reputation-based.

"Right now, old age mortality and morbidity are my current big milestones. The latest report is 'Old Age V.' I have also given a lot of seminars, worldwide, on numerous topics.

"The personal actuary movement has been a success ever since 1998. It is a very much needed service. Its many aspects include health expectancy and health status of individuals.

"I'll relate just one story about it:

"We have a small club with only five members. Membership is open only to people who run for president and have had their health expectancies published. The members are Obama, McCain, Hillary Clinton, Johnson and Trump. All of these passed the health expectancy test with flying colors; all are gaining 'benefit of survivorship' as they go on. (The next club openings will be in 2020.)

"We were overjoyed in 2016 to be contacted by the fact checker of *The Washington Post*. He sent us our news release for 2008 and wanted to know if we would be doing the same for the 2016 candidates. We said we had just completed them! People need to know that their presidents will be healthy. We felt that this was a pretty good public service by the actuarial profession." The link is *https://www.washingtonpost.com/news/fact-checker/wp/2016/09/08/actuarial-math-trump-has-a-slightly-higher-chance-of-dying-in-office-than-clinton/?utm_term=.1320a272471d.*

3. Please tell us about your tenure as president of the SOA.

   "I was president of the SOA 1975–1976. A lot of time was spent trying to deal with the bitter fractures in the profession. Two new sects had even popped up: ASPA and The Enrolled Actuaries. One big personal success I had was persuading the Joint Board to accept the SOA's pension exams rather than subjecting our kids to two sets of exams. I also had something to do with starting the 'Sections' which have been a complete success without creating the horrors of separate organizations."

4. In June, 1966 you wrote "Prices and Commissions Based on the Theory of Games." Can you describe how you used game theory to tackle these actuarial problems?

   "At that time, game theory was just being developed by Nash (of A Beautiful Mind fame) and others. So, I looked into it. It turned out to be extremely capable of coming up with the optimal price which was acceptable to both buyer and seller and the correct way to approach commissions, overhead, profit, competition and control. Such problems had plagued actuaries and others for years. Furthermore, the paper attempted to put down a lot of bad practices that seemed to be going on.

   "Geoffrey Crofts, FSA, encouraged and helped me with that game theory paper. Geoff had originally been my student, but had now become responsible for hundreds of actuarial careers worldwide. (Also, he had married his wonderful wife, Jean, who just happened to be my own wife's best girlfriend. We introduced them.) Geoff still encourages me all these many years later. I also had my wonderful cadre of actuarial students at Life of Georgia."

5. Do you think game theory and other strategic tools such as scenario analysis and futurism can be useful to actuaries? Or could it be that these disciplines are better suited for those who intend to manage a company or a department such as MBAs?

   "I most emphatically believe that all these disciplines are essential for actuaries. The managers should embrace these disciplines also, but they usually operate just on instinct, which is often quite good. The managers do trust their actuaries. The actuaries need to realize that they are the real plan designers, regardless of any 'reporting arrangements' that may exist. Another most essential point: the actuaries should become the managers. (That's what eventually happened in my own career!)"

6. Some famous mathematicians read your article and became aware of your work. Can you tell us about that experience?

   "Sylvia Nasar wrote the magnificent A Beautiful Mind book about Nash. She eventually saw my game theory paper. She said it was fascinating and that I was 'way ahead of the curve.' She gave a copy to Nash who was tickled. (Incidentally, Sylvia had originally been an actuarial student, which I consider to be wonderful.) It is most unfortunate that Nash and his wife were killed in a taxi accident in 2015."

7. In 1974 you wrote "The Future of the Actuarial Profession as Viewed in AD 1974." The outlook of the actuarial profession is a matter of importance now as it was then. Can you summarize your findings? What are your current views about the profession? What are your views about the future of the profession?

   "My 1974 paper concluded that the outlook for the profession was bright. That turned out to be true. (There were about 5,000 actuaries then; now there are about 26,000.)

   "Maybe the 1974 paper really created the modern actuarial profession. That 1974 paper is still relevant. We still need greater professionalism and better ways to be futurists. ('predictive analysis' is the current catch phrase.) And we are still in our 'Time of Troubles.'"

Right now, the profession needs a big morale boost. We are not number crunchers. We're the plan designers. We do have that overall view, which is so badly needed. The profession needs to find better ways to get jobs and funding; there will be a successful response to that challenge also. Based on that belief and the tremendous need for our services, the future of the actuarial profession is still bright!"

8. In "The Future of the Actuarial Profession as Viewed in AD 1974" you demonstrate command of history and literature. You use it to, among other things, develop a solid structure for your observations. Do you think that, realistically, a strong background in non-technical areas pays off in a professional career? Maybe sometimes it does and sometimes it doesn't?

   "I believe that a strong background in non-technical areas is essential for a professional career—and most especially for an actuarial career. (There are no cases where 'sometimes it doesn't').

   "Backgrounds can differ, and that's OK. Just have one! Maybe I could say something about my own background interests and how they came about. The list has gotten to be pretty long: history; literature; music (piano, trombone and choir); water-color painting (especially kids portraits); physics, astronomy (resulting from my celestial navigation during WWII), golf and sailing. I am both an opera buff and a baseball fan. The literature interest, which is relevant to the paper, arose through the help of a very good professor of English (Ted Spivey) who gave classes at our church.

   "Another thing about outside interests: don't claim that you are an expert. You know the wonderful field in which you are expert!

   "Another point: be on boards and not just actuarial boards. You'll be surprised to discover that people on boards really don't know each other. Especially, they don't know people on other boards. You become the connecting link. Your communication skills will benefit immeasurably.

> To put things in a nutshell: be proud of the profession. Do a good job. Realize the public trusts you. Continue to be worthy of that trust.

"You'll also be surprised to discover that all of those good ideas, which you need, just seem to pop up out of your background."

9. In addition to the two ground-breaking articles you have discussed, we know you have been working on new ideas. Do you care to describe some of them?

   "We are in quite a mess right now about health and health care, especially at older ages. Actuarial solutions are badly needed. So, I am working on a draft paper titled 'Human Health Based on Quantum Mechanics—and the resulting New Health Contingencies.' You shouldn't be surprised because, after all, I was a physics major when that miracle occurred on the front steps of the arts building. It has just taken me 77 years to get back to quantum mechanics.

   "So far, the results are extremely fascinating. Talk about predictive analysis! Talk about an amazing new track to run on! I appreciate the help I'm getting from Carlos Fuentes, editor of this section's newsletter.

   "I hope to get the paper published this year, and that it will become useful. Among other things, the paper deals with the entirely new subject of "recovery" which is the only good way to go."

10. Is there any advice that you feel would be valuable to actuaries, young or experienced?

   "I guess I have already come up with a lot of advice. However, to put things in a nutshell: be proud of the profession. Do a good job. Realize that the public trusts you. Continue to be worthy of that trust. ■

Carlos Fuentes, FSA, MAAA, is president of Axiom Actuarial Consulting. He can be reached at carlos-fuentes@axiom-actuarial.com.

ABOUT JOHN M. BRAGG

Education and Professional Designations

- Educated in Canada and Scotland
- FSA, fellow of the Society of Actuaries, 1949
- ACAS, associate of the Casualty Actuarial Society, 1957
- M.A.A.A., Member of the American Academy of Actuaries, 1965
- EA, Enrolled Actuary, 1976
- B. Comm. Hons., University of Manitoba, 1943
- Navigator, RCAF, 1944–1945

Experience

- Great-West Life Assurance Company, 1945–1956
- Life Insurance Company of Georgia 1956–1978,
- President & CEO, 1975–1978
- John M. Bragg and Associates, Inc., 1978 and continuing
- Series of five Bragg Life Tables (BLT's), 1981–2013
- A leading authority on the subject of mortality and health experience; specialized in the effect of smoking, and in mortality and health at older ages.

Professional Contributions

- President, Society of Actuaries, 1975–76.
- Various actuarial profession committees and programs from 1949 and continuing.
- Abolished racial pricing, Civil Rights era.
- Author of "Health Insurance Claim Reserves and Liabilities," 1963 (This was on the actuarial exam syllabus for many years).
- Author of "Prices and Commissions Based on the Theory of Games," published May 1966 in the Journal of Risk and Insurance.
- Developed Socio-Economic methods.
- Author of "The Future of the Actuarial Profession as Viewed in 1974 AD" published in TSA.
- Author of regular "Putting it Together" column in the National Underwriter.
- Author of book: Protecting Against Inflation—and Maximizing Yield, published 1986 by Georgia State University.
- Developed the cost of living policy.
- Developed the role of the personal actuary.
- Developed the concepts of health expectancy and health status 1998 to present.
- Authored and co-authored numerous papers in actuarial publications.

Editor's Note: Most unfortunately, Geoffrey Crofts passed away on March 14, 2017, days after the interview with Bragg. Crofts' contributions to the profession are living testament of his dedication and professionalism.

Becoming a More Effective Innovator

By Jay M. Jaffe

In May, 2016 I was a member of a panel at the SOA Life & Annuity Symposium in Nashville. My contribution to this panel was to discuss aspects of innovation that may help actuaries be more effective participants in product innovation.

INNOVATION VS. INVENTION

It is common to conflate the words innovation and invention. Invention or being inventive means working on something that is really new. One way to distinguish invention from innovation is to think of invention as a legal process that involves patents, proprietary information, etc. On the other hand, innovation is about making an idea work in the market place.

In a recent article in the *NY Times*, Adam Davidson succinctly described the invention/innovation timeline:

"… our lives improve not at the moment of invention but when society creates the conditions to allow new ideas to become integrated into our daily lives."

> Invention or being inventive means working on something that is really new.

At the end of your careers only a few actuaries will have invented something. On the other hand, the majority of actuaries probably will be directly involved with innovation, either as an individual or part of a team. As a successful innovator, you will have brought a new product, process or something else, to the point where it became an integral part of your company's operations.

The use of Rx data to assess risk in underwriting life insurance illustrates the distinction between invention and innovation. Someone understood the value of Rx data, figured out how to collect them, and how to analyze them. This person was an inventor. The role of actuaries was to improve the risk assessment process by incorporating Rx data into it. First, we realized that Rx data were valuable; then we explained to others why this is so. While the insurance community continually seeks new underwriting tools, it didn't wake up one morning and suddenly feel comfortable incorporating Rx data in the risk assessment process. Adopting Rx data into life insurance underwriting was an innovation process rather than an invention activity. Talented people from many areas of our companies cooperated to make Rx analysis an integral part of the risk selection processes.

TYPES OF INNOVATION

Early in 2016 I was fortunate to listen to a webinar presented by the MIT Sloan Management Review. The title of the webinar was *Cognitive Technologies: The Next Step Up for Data and Analytics*. As I was listening to the speakers, I realized how their discussion helped me better understand the types of innovation activities that actuaries work on.

The Sloan webinar stated that current business changes almost always fall into one of the following areas:

- Eliminate tedious work,
- Reduce labor costs,
- Utilize the explosion of new available data,
- Make more accurate decisions, and
- Embrace powerful new technologies.

Most actuarially-related innovation projects are also likely to fall into one of the above areas, typically with the intent to make things work better rather than to make dramatic changes. Years ago the chemical company BASF emphasized this point in one of its commercials when it said "we don't make the dress, we make it redder." Let's remember, for the most part, as actuaries we're in the coloring rather than the dress design business.

INNOVATION BARRIERS FOR THE INDIVIDUAL

In theory, none of us would argue that eliminating tedious or repetitive work, reducing labor costs, using data more effectively, making better decisions and embracing powerful new technologies are bad objectives. But when we bring these innovations in the workplace, we immediately come face-to-face with the natural human reactions that impede innovation. The most important of these is: am I going to lose my job as a result of a new innovation?

Getting back to the Rx example, I'm sure that many underwriters believed that the use of Rx data was just another way of eliminating jobs. I think most of us understood that underwriters were not suddenly going to become unemployed, but it certainly became evident that the underwriter of the future would not perform her job as underwriters of the past had done. Yes, change is frightening but it is a natural consequence of innovation. We can deal with it once we understand more about innovation.

So, if you're assigned to an innovation project, you'll also need to think about what it means to you and to your fellow workers. Humans have a role to play even when the intended result is to improve operations. It is not axiomatic that innovation eliminates the need for human intervention—quite the contrary!

So, what can humans do to eliminate, minimize, or even improve the impact of change on their personal careers? The MIT webinar speakers explained how humans can become more important to the innovation process in five "steps":

- **Step In**—master the details of the system to know when it needs modification
- **Step Up**—take a big picture view and help make the decisions about automating new areas
- **Step Aside** —focus on areas where humans still do the work better than new technologies
- **Step Narrowly**—work on areas that are too narrow or limited to be worth automating
- **Step Forward**—remember, humans build the new systems!

BECOMING A BETTER INNOVATOR

If you want to become a better innovator, not only should you think about these five "steps," but also work on broadening your abilities to contribute more to the innovation process and even, perhaps, lead it. Here are some of my personal recommendations:

- **Always think about HOW TO rather than HOW NOT TO.** If you don't offer solutions to problems that arise during the innovation process, you will be an impediment and a barrier.
- **Become time sensitive.** Sure, all of us need time to consider new ideas, but keep in mind that projects need to move forward, otherwise they will stagnate and die. All too often I've seen actuaries fret about making decisions related to innovations. The result is that good ideas are shelved because everyone loses interest in project.
- **Become a risk taker rather than a risk avoider.** Actuaries are skilled at understanding and measuring risk but that information must to be translated into a decision. Again, the decision to kill a new idea is often made because it is a safer path, although such decisions seldom consider the

consequences of not implementing the innovation. Learn to distinguish between risk taking and risk avoidance!

- **Remember BASF's perspective.** Although BASF's strength is its ability to develop new products, the company is aware of its role in the innovation process: BASF doesn't make the dress, it makes it redder.
- **If you're working in the life insurance business, start selling insurance.** Get an agent's license and see what it takes to sell a policy. You'll acquire a new perspective of what needs to be done as well as increased empathy with those tasked with making sales. This may help you develop innovative solutions!
- **Be particular with whom you have lunch.** Rather than going out with other actuaries from your company, start to hang out with the marketing types and any other creative colleagues.
- **Read, read and read.** Become a voracious reader of books on business, economics, science, etc., where new ideas are presented. Think about how they may apply to your business. Science fiction is often a leading predictor of technological changes. You'll find that as your view of the world expands, you'll be able to generate new ideas and solutions. And don't forget to partake in the humanities because, as it is said, they bring breath to your life and make us human.
- **Don't only attend actuarial meetings.** Find non-actuarial insurance industry meetings to attend to widen your perspective about problems that need solutions.
- **Volunteer in your community.** Be exposed to different aspects of life that stimulate your thinking about what's needed and what's next.

I have two final thoughts for actuaries who want to be innovators or inventors: DREAM. Let your imagination go wild. Consider the "if I only could" ways to improve people lives and interactions. Some people have created solutions to problems that we only realized existed when the solution was put in front of us. Where would we be if people like Bill Gates and Steve Jobs had not made personal computers and electronic communication as important to our daily lives as the air we breathe and the water we drink? I recognize I'm describing a "if we build it, they will come" scenario, but it is one under which new ideas and products have been created. It is even possible that you'll defy the odds and be both an innovator and an inventor.

LOOK INSIDE. If you're concerned about how you personally react to innovation, see Walt Kelly's Pogo cartoon from Earth Day (*https://enviroethics.org/2012/07/07/vintage-poster-pogo-earth-day-1970/) in 1970 is always worth another view.*

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SOCIETY OF ACTUARIES®

Should I Get an MBA in Addition to an FSA? Predictions, Perspectives, Analysis and Reflections

By Mark Spong

It's going very slowly, but 10 years from now, it should be much easier for an actuary to move into what was previously considered an MBA-only role. That's my stance on it. -David W. Simpson, transcribed from SOA Washington Annual Meeting, October 1997

Mr. Simpson's prediction from nearly 20 years ago highlights a major question that many actuaries consider at some point in their career: Should I get an MBA in addition to my FSA? Or will an FSA (along with experience and skill) qualify me to step into the types of business leadership roles that I look forward to?

Opinions vary widely and are largely dependent on personal circumstances. More and more actuaries are pursuing non-traditional roles and becoming entrepreneurs and innovators. The actuary of the future may be much more of a general business leader as Mr. Simpson predicted. The goal of this article is to aggregate those perspectives and sharpen our thinking as we consider if adding an MBA would make sense.

CLARIFYING THE QUESTION

Before diving into arguments for and against adding an MBA, we should make a few things clear.

An MBA can mean many different things. It can mean two years studying full time at a very selective and prestigious institution. Executive MBAs can mean many months of night and weekend classes. Some MBA programs are offered entirely online.

The cost of an MBA varies just as widely. Full-time programs can cost several hundred thousand dollars when you take tuition and foregone salary into account. Executive MBA programs can be just as costly but a company sponsorship may be available.

With the variety of MBA options to consider, it is very likely that certain paths would be inappropriate while some others might make sense. To help make this distinction we should be explicit in selecting a set of "win conditions" that may justify the investment of time and money. For an MBA to be worth it, it should lead to:

1. Greater impact,
2. Expanded opportunities,
3. Increased personal fulfillment, and
4. Higher compensation.

The order may be subjective, but for an MBA to have any value it should have meaningful impact on the business. With the additional education, one should theoretically be able to step into more roles and take on greater responsibility. The last two conditions are certainly important, but are hollow and selfish motivations if the first two conditions are not satisfied.

ARGUMENTS FOR ADDING AN MBA

Non-actuarial MBAs are overwhelmingly positive about their MBA experience and the impact the degree had on their career. The alumni network is always stated as the primary benefit followed by executive presence training and general business knowledge playing a distant third. They often credit their first job (and salary bump) to their MBA program.

FSAs + MBAs also tend to be positive about their MBA experience. In 2009, Mark Sorenson and Jay Jaffe wrote an article for the SOA titled " *Is FSA enough?*" and concluded that MBA programs offer a very attractive means of skills training and broader recognition required to compete and advance in a competitive and changing environment.

The perspective of actuarial students tends to be that they observe the impact that FSAs + MBAs business leaders have and naturally want to emulate that success. The Corporate Finance fellowship track is the most popular (~30 percent of FSA exam attempts according to *actuarial-lookup.com*), and has the most overlap with the MBA curriculum. For example, the primary source material for the CFE Exam is a textbook called Corporate Finance written by two Stanford Business School professors, and specifically focuses on applying risk management concepts beyond just insurance.

All three of these groups would argue that an MBA represents a broader base of knowledge and skills and is more publicly recognized as a leadership credential than a traditional FSA. Key uses for an MBA are:

- If you are in a top tier institution the recruiting process enables you to get your foot in the door at firms that might otherwise be closed.
- The network you build with classmates can help you change companies or industries and/or pivot roles. Those relationships can also be a long-term valuable asset to your company.
- The soft skills training may boost your presentation and communication skills and may make you a more effective manager and business leader.

ARGUMENTS AGAINST ADDING AN MBA

Experienced FSAs generally seem split in their opinion. Skeptics tend to point out the following:

- Business schools do not have a monopoly on self-improvement. A well-crafted personal development plan plus active and deliberate networking can yield the same kinds of benefits. Two intense years at a consulting firm would do more for polishing communication skills and enhancing executive presence than any number of case studies or classroom presentations.
- An FSA is a professional designation with certification and ethical standards (think quality control) whereas an MBA is not.
- The promise of a strong MBA alumni network is the result of highly successful marketing on the part of business schools, and is not a guarantee. Wide-eyed applicants buy this dream and pay a substantial premium for this intangible asset.
- One of the most attractive features of an actuarial career is that an FSA is sufficient. Candidates do not need fulltime graduate degrees. Pursuing an MBA would negate this relative advantage to other careers.
- If you don't pursue an MBA-track role when you first complete the MBA, you may be squandering its value at its peak.
- As an FSA you already have your foot in the door in the industry and you don't need an MBA to have an "in" with the top firms. In fact, it may even seem like recruiters will knock down your door once you earn your ASA or FSA.

Actuarial recruiters also tend to be skeptical of adding an MBA (see the recent DW Simpson article *Pursuing an MBA as an Actuary – Is It Worth It?*). The main drawback identified in the article is cost, which we can explore more on our own.

Suppose you earn your FSA and then take two years off to attend a top-five business school full time. You miss out on salary and incur substantial debt with the hope of landing a top paying job on graduation. How much does the salary boost have to be in order to balance out the cost of tuition and lost earnings?

The following hypothetical framework puts a career as an FSA on the left and an FSA plus MBA on the right. It makes some sweeping assumptions, but it is a start for an interested reader to personalize.

NPV(FSA Salary)=PV(NPV(FSA+MBA Salary))-NPV(Cost of MBA)

P=FSA Salary=$100,000
R=Annual Cost of MBA=$70,000
r=discount rate=10%
g=salary growth rate=3%
n=career length=30 years
X=Required Post MBA Salary Bump

$$\frac{P}{r-g}\left[1-\left(\frac{1+g}{1+r}\right)^{n}\right]=\frac{1}{(1+r)^{2}}\cdot\frac{P+X}{r-g}\left[1-\left(\frac{1+g}{1+r}\right)^{n-2}\right]-R\left(\frac{1-(1+r)^{-2}}{r}\right)$$

$$X \approx \$36{,}000$$

This particular example requires a salary bump of $36,000 in the year after an MBA in order for the investment to break even.

At first this bump seems reasonable when compared to the headline of the Fortune article " *Congrats, MBA grads! You're getting a $45,000 raise.*" A second look shows the median starting salary for a newly hired MBA is about the same as an FSA without an MBA. Expecting the same boost in earnings on top of FSA compensation may be optimistic. A Wall Street Journalarticle noted in 2013, " *For Newly Minted MBAs, a Smaller Paycheck Awaits.*" Even at Wharton, one of the best business schools in the world, the median salary in the *Wharton Employment Summary* for 2015 MBA grads is $125,000, still thousands less than the breakeven point for this example.

Aside from the cost, there are other considerations that are more subjective. The first is that designations can be very alluring. The attraction of additional letters to add to your signature and pad a resume can be incredibly strong. It is very important that a choice of this magnitude is not motivated by vanity. Earning an MBA on top of an FSA might be unconsciously equated to a golden ticket to the executive suite.

The second consideration is that there are several sources of bias that can warp our perception of the value that an MBA may add.

- Positive attribution bias may color the perspectives of MBAs. It would be difficult to admit that the time and money spent on earning an MBA was not worth it.
- Survivorship bias may sway observers to believe that the reason why MBAs often have more visible leadership positions than FSAs is because of their MBA. We may mistakenly ignore many other MBAs who were not as successful.
- Confirmation bias may lead people to favor an MBA because it is more widely known and marketed. If we expect MBAs to be successful business leaders, then that is what we are more likely to observe.

A third consideration is the differentiation factor. How much would adding an MBA set you apart from your peers? A quick look at the numbers may be surprising. There are just over 16,000 current FSAs in total (*SOA Analysis of Membership*). To put this in perspective, more than 100,000 MBAs graduate every single year in the U.S. (*Graduate Management Admission Council*). Harvard MBAs alone outnumber FSAs. While it is true that an FSA + MBA would be an even smaller and possibly more elite subset, there are plenty of other ways to distinguish your experience. For example, you might actively pursue lateral career moves for broader experience or stretch assignments in non-traditional roles. The point is that an FSA may be able take you farther than you think. After a decade on the job, odds are that your performance will be what distinguishes you as opposed to your credential.

CONCLUSIONS

A common theme that came up during this research was branding. Perhaps it is not surprising that the degree that includes marketing and competitive strategy has clearly captured the public's perception of leadership.

A company-sponsored Executive MBA turns out to be uniquely attractive to an FSA. It would satisfy all the identified win conditions in a way that other options may not. By partnering with your sponsor company, your impact on the business would be based on an independent assessment of real results, not just hopes and dreams. The investment in human capital by the sponsoring company would almost certainly be connected to strategic talent management goals and succession planning. The sponsoring company would cover all, or part, of the cost, which would be essentially equivalent to a raise. The partnership seems like a reasonable way for an FSA to further their personal and professional development while also meeting the needs of the business. Besides, would you rather network with proven business professionals whose sponsoring companies want to invest big money in them or bright, ambitious full time students just a few years out of school?

The goal of this article was to sharpen our thinking by presenting some perspectives and analysis. There are still a host of other questions to keep you up at night as you wrestle with deciding your path. As you do, remember Mr. Simpson's prediction and consider Bob Morand's reflection.

"The landscape has definitely changed since 1997. Actuaries have made themselves much more relevant for insurance companies. For example, the CRO title didn't really exist back then. Actuaries have ascended to C-suite roles that used to be filled by MBAs. Looking forward another ten years, actuaries continue to reinvent themselves. Predictive Analytics is one area where actuaries continue to evolve and progress."

Bob Morand vice chairman, president & managing partner of D. W. Simpson

6/30/2016 Interview

Note: Thanks to the dozens of people who contributed their perspectives and helped shaped this article.

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Strategy—A Historical Overview

By Carlos Fuentes

The SOA's Entrepreneurial Actuarial Section (EAS) sponsored three presentations during the 2015 Annual Health Meeting: "Business Networking for Actuaries, Strategy—A Historical Overview and the Women's Leadership Forum." The sessions were well received. The EAS asked the speakers to summarize the content of their presentations in articles to be published in *The Independent Consultant.*

For more details on strategy see, "A Lesson From the Greeks," *Contingencies*, Nov./Dec. 2014, and "The Connection Between Business and Military Strategy," *Contingencies*, May/June 2015.

Now then, I have studied, in my time, the plans and minds of great ones by the scores—King Menelaus in Homer's Odyssey

> A sensible approach to understand the meaning of strategy is to reflect on its historical roots.

In the current business lingo there are concepts that are popular to the point of almost having lost their meaning. Strategy and leadership are probably the prime examples. The problem with a devalued concept is that its meaning is murky at best and, in some cases, outright misleading. For example, given the popularity of the word "leadership" many believe that a seminar or a book will transform them from non-leaders to leaders or from leaders to great leaders. Similarly, the proliferation of cookbooks on strategy suggests that a great number of people adhere to the idea that strategy can be learned quickly and with minimal effort. This belief is akin to thinking that one could become an FSA with little effort and no stress in a matter of months. Fast tracking ideas have always been appealing, but those who have taken actuarial exams recognize them as wishful thinking.

The situation with strategy is similar except, perhaps, for the fact that certain phrases make us sound smart and might even convince us that we are. Should you develop a forecast or a strategic forecast? Should you present a business plan or a strategic business plan? Should you call for a pricing meeting or a strategic pricing meeting? In the vast majority of cases the adjective "strategic" is superfluous; but nonetheless it conveys a sense of deepness of thought that, however imaginary, is fashionable and makes us feel good.

A sensible approach to understand the meaning of strategy is to reflect on its historical roots. In Classical Athens, a strategos was an army's Commander in Chief and also a high ranking politician. This characterization shows the link between purpose and force, suggests that strategic goals are far reaching (in contrast to tactical objectives), and hints at the interplay between leadership and strategy. It also suggests that becoming a strategos required education, experience, technical ability, foresight, ability to relate effectively with others, political sophistication and a bias towards practical results. Thinking like a strategos, that is, thinking strategically, could not be achieved in a few months with little effort. That was true then and it is true today despite the proliferation of popular strategy in many business schools, seminars and bookstores.

The central theme of military strategy is to improve one's chance of winning when much is at stake, when the best course of action is elusive. Despite popular conceptions, strategy is not akin to a master plan or to infallible deduction. Perhaps a sensible way to characterize military strategy is as follows:

- War is unpredictable, it involves chance and skill. It resembles more a poker game than a chess game;
- War is dynamic, it demands constant reassessments, adaptation and management of resources;
- Strategy involves general principles and frameworks that must be adapted to particular conditions, not recipes for success;
- Strategy involves the ability to assess any given situation, craft plans that are suitable for that situation, and deploy resources accordingly;
- Strategic thinking requires foresight; and
- Strategic action demands the ability to relate well with others.

If in the list above the noun "war" is replaced by "business competition" all items would be equally relevant. This is one of the reasons why academics, consultants and business managers adapted and mal-adapted strategic war concepts to the business world: business, like war, involves competition, chance and skill; the objective is to win. Thus, it is not surprising that many of the

strategic tools that are taught in business schools had their origin in military thinking. Examples abound, such as: operations research; the learning curve; distinctive competencies; strengths, weaknesses, opportunities, and threats (SWOT) analysis; scenario analysis; game theory, etc. For example, the concept of distinctive competencies, which many consider quintessential to business education, was developed by the Navy when some proposed to unify the Army, Navy, Air Force and Marine Corps. The question under consideration was whether a unified body would be more effective than four separate units. Much research was carried out, but the short answer was that the best course of action required the development of specific skills, hence the units should be kept separate. Interestingly, some business writers have espoused this general idea almost regardless of context and thus adhere to the general principle of developing distinctive competencies. As in war, the correct approach depends on the particular circumstances of the situation. This might sound like an obvious statement—that actions should fit the context—but judging by what some recommend, it is not.

Perhaps part of the problem is that the desire for shortcuts to strategic education has fueled the demand for popular strategy which in many cases can be boiled down to recipes. The popular strategy industry is pervasive to the point that those with any knowledge of strategy are vastly outnumbered by those exposed to popular strategy. Furthermore, popular strategy has gained some respect among many professionals as attested by the success of books like From *Good to Great* and schools that teach frameworks such as Blue Ocean Strategy.

Leaving aside popular strategy (because formulaic approaches don't work), the question is whether strategic thinking indeed increases the chance of success. The answer is a clear "yes" in the military sphere and a qualified "yes" in the business world. Why the difference? Many ideas come to mind, but one that resonates was offered by a friend, Michael Mitchell: the stakes are much higher in war where defeat could mean death and worse, whereas in the business world the consequences are usually limited to truncated careers with parachutes. For this reason, Michael continued, strategy is essential in the military realm and more or less optional in the business world. ■

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Business Meets Academia—Case Study in a Startup Just Starting

By Thomas L. Totten

In a recent article published in *The Independent Consultant*, I wrote about my return to graduate school. My intention was to study a retirement problem. Little did I know how this experience would change my thinking about the problem and how it would influence my professional life. As a result of my return to school, we are now setting up a new company that will apply theoretical constructs to solve practical problems. In this article I describe the ideas that inspired the creation of a company.

The management of Nyhart, our parent company, an S-Corporation ESOP, is setting up an actuarial technology firm in Delaware. The S-Corp ESOP is owned by a qualified retirement plan which is exempt from income taxes. These savings could be invested to generate additional operating margin, but that's an issue for a different article.

> People overestimate low probability events and underestimate high probability events.

The process that we are following is grounded on the following academic research:

- Clayton Christenson's book *Disruptive Innovation;*
- Behavioral Finance as described by many authors. We have focused on the work done by Daniel Kahneman, Dan Ariely and Richard Thaler; and
- Chip and Dan Heath's book, *Made to Stick*.

I'll summarize key aspects of these theories and describe how they have influenced the creation of our enterprise.

DISRUPTIVE INNOVATION

The term is somewhat overused at the moment. Christenson studied how disruptive changes put companies out of business. The example that hit home was the steel industry. As a steel mill rat, growing up in northwest Indiana, home to the large coke ovens of US Steel, Bethlehem Steel, J&L Steel and Inland Steel, I assumed that the steel industry would live forever—my father and uncle spent more than 35 years in these mills. Clayton examined how the mini mills (think Nucor) destroyed most of the companies I mentioned. Clayton's research showed that it wasn't a new technology, but new applications of the existing technology that enabled the change. The mills also failed because they adhered to what many considered good management practices, such as exiting low margin businesses. It was an eye opener to see that businesses can fail by practicing state of the art management techniques.

To combat disruptive forces, Clayton formulates a plan that includes setting up separate entities that may compete directly against the company's main product or service. It is only by challenging all internal systems that a company may cope with disruptive change. This is what we are doing at Nyhart. We are setting up a separate entity that will disrupt our current distribution model. The new entity has a different culture and balance sheet, but complete support from the CEO and the board of directors. There may be internal tensions between the entities, but we believe this is the path to the future.

BEHAVIORAL FINANCE

I find this topic fascinating. I believe that many actuaries could use behavioral finance in their fields. In 1965 Menachem Yaari wrote a paper that showed that rational risk averse consumers prefer annuities over other forms of payment streams in retirement when faced with an uncertain lifetime. As in any scientific field, you have to challenge assumptions and question whether people are truly rational decision makers.

The psychologist Daniel Kahneman and his co-author, Amos Tversky, developed the Prospect Theory after studying how people make economic decisions and in the process won the Nobel Prize in economics. I find particularly interesting two theoretical results: the first is that people overestimate low probability events and underestimate high probability events; the second is that people are willing to gamble losses, but prefer to capture certain gains.

As a pension actuary and much like Yaari, I thought rational people would tend to prefer annuities over lump sum payments. But since people overestimate the low probability of death, they may choose lump sum payments. It is well known that annuities are not easily sold, nor are they chosen in pension plans. These theories can be applied to help retirees make better choices. For example, I met with a group of my clients and shared hypothetical data related to retirement. I asked what would they choose at retirement, a lump sum payment or annuity? Unknown to them, one half of the group had additional information: the person was told to assume a 50 percent chance of living to age 85 once age 65 was reached. The sub-group with the additional information chose the annuity at twice the rate of the sub-group without it. The business we are creating will take advantage of Kahneman and Tvversky's theory.

MARKETING

I never realized the business potential of psychology. But in my course of study I learned that management and marketing are simply the applications of psychology principles to employees or the masses, as the case might be. These were foreign concepts to me, a quantitatively trained person.

Chip (Stanford) and Dan (Duke) Heath are brothers and teach psychology. They formulated a simple plan to improve the effectiveness of marketing messages. Adherence to the principles described in their book "Made to Stick" increases the chances that people will understand and believe in your product.

Following these principles in the development of the website is difficult. However, the goal is the goal, and we hope to simplify a very complex topic.

CONCLUSION

The alpha version of the business tool will be released in the next few months. We will then use the methods described in the Lean Startup by Eric Reis to test our assumptions and improve our products and services. We'll find out whether business theory meets practice. Regardless of the outcome, education is an end by itself. ■

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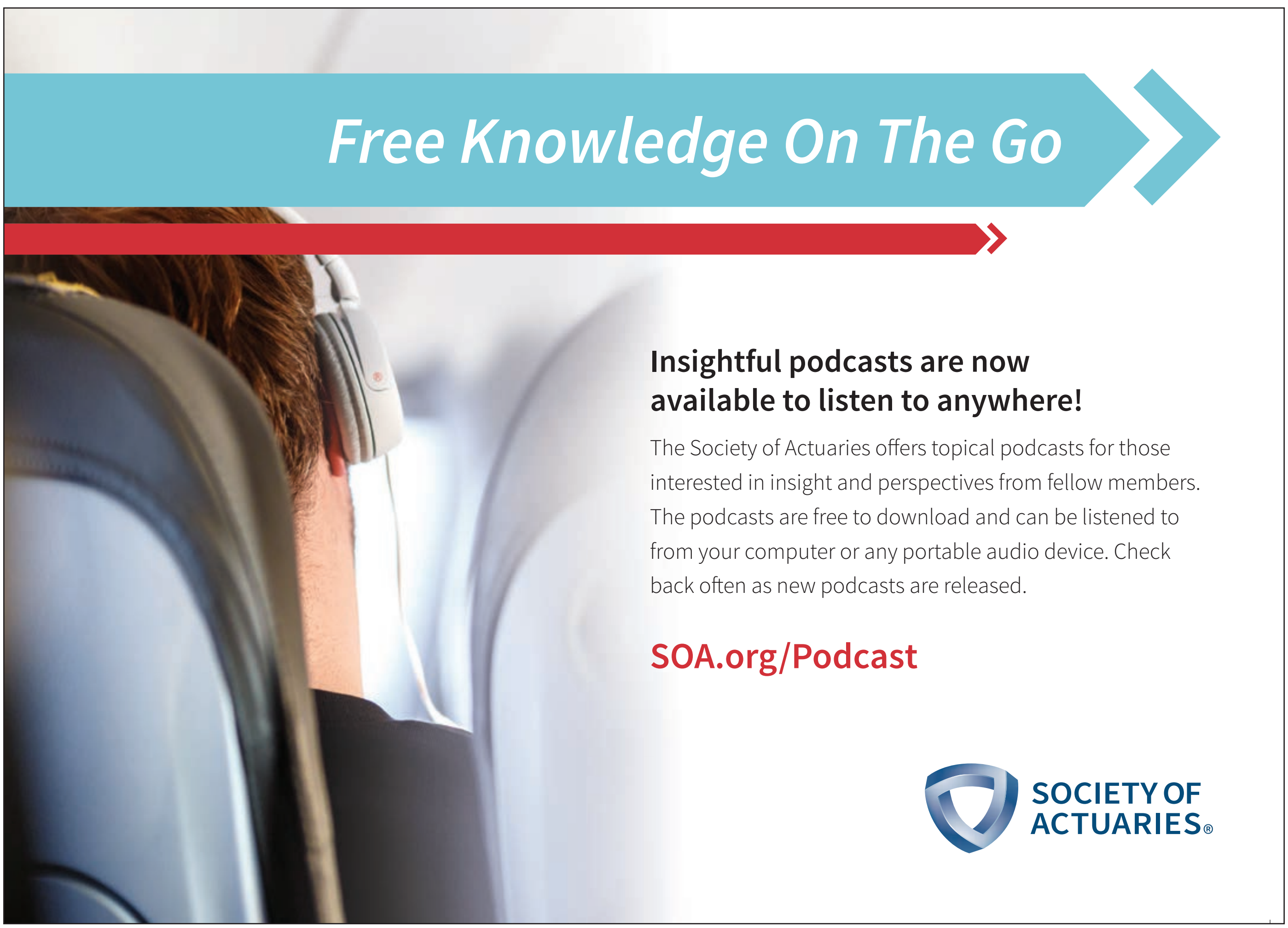

The Evolving Venture Capital Debate

By Alkarim Jivraj

I read two articles this weekend, "I'm Glad I Did Not Take VC Funding" and "Canada's Tech Start-up Scene Needs 'Aggressiveness and Boldness,'" both of which are great examples of how the conversation around funding and growing your business has become highly polarized. It's a dialogue that deserves much greater nuance than a simple and binary, pro and con judgment. The decision to raise outside capital should encompass a multitude of factors including:

- the founders' growth aspirations;
- the company's funding needs relative to internal funding capacity; and
- the willingness to give outsiders a voice in the company's future direction.

In my view, the prominence venture capital commands in this conversation does everyone a disservice. Venture capital is generally attracted to a particular type of company. It seeks a very high return on investment, and is willing to tolerate great risk in pursuit of that aim. Not all companies will fit the bill, which is why institutional venture capital funded companies account for less than 5 percent of all technology businesses today.

How aggressively you choose to pursue growth is entirely your prerogative. Don't be goaded by those who claim you are not "aggressive" or "bold" enough. While it's perfectly okay for a venture capital fund to swing for the fences, the default expectation of failure is unpalatable for most entrepreneurs. In an economy with shrinking corporate employment, entrepreneurship is increasingly becoming an alternative source of livelihood for many. Seeking or obtaining venture capital should not be the default measure of success for all entrepreneurs.

Getting back to the funding debate. Most companies eventually seek outside funding of one type or another to support growth. Venture capital is one source, but there are many other options including friends, family, angels, strategic investors, government assistance, bank debt, venture debt, and in certain circumstances, going public.

All outside investors deserve a duty of care, and some may wish input into the future direction of your business. While having more people at the table increases the potential for dissenting perspectives, I believe the benefits outsiders bring to the table typically outweigh any potential loss of control.

As for venture capital (or other outside investors) being evil, keep in mind that positive outcomes get very little media attention. Just like you don't see newspapers report on planes that land successfully, you are way more likely to hear about bad experiences than good ones.

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New Year's Evolution

By Patrick Chaaya

We live in the age of statistics. "Big Data" is the flavor of the month. Firms across all industries are collecting, storing, classifying and analyzing more data than ever before in a race to improve their profits and put themselves ahead of their competitors. As actuaries, we are ideally placed to benefit from this trend with our rigorous technical training and given that much of our professional lives revolve around making inferences from data with the ultimate aim of making or saving our employers' money. And yet, in some sense, we've been here before. In the late 19th century actuaries were at the forefront of developing new techniques for pricing financial securities from bonds to equities. Yet it was ultimately two economists who went on to develop the theory that underlies much of today's pricing of financial derivatives and PhD physicists who spearheaded the practical implementation of these theories on trading floors on Wall Street and in the City of London. Similarly, the role of actuaries in risk management hasn't taken off to the extent that some might have hoped despite the introduction of the CERA qualification and the fact it was a Swedish actuary, Filip Lundberg, who first developed the foundations of mathematical risk theory more than a century ago.

History aside, it is clear that actuaries have the potential to make a significant contribution across a range of roles and industries in which we have not previously been involved. The extent to which actuaries have consolidated their position within the non-life insurance industry over the past few decades stands as a testament to our ability to do this successfully. More recently, actuaries have begun to take tentative steps in fields such as banking, health care and energy. It is towards this aim that we have recently established a working party at the Institute and Faculty of Actuaries (IFoA) in the United Kingdom to look at opportunities for actuaries outside of the traditional areas of insurance, pensions and asset management. Our first port of call has been to commission a survey of IFoA actuaries who are currently working in, or have experience working in, so-called "wider fields." We hope to learn from the experiences of these pioneers of our profession and draw insights that could help other actuaries make similar moves in the future. Our initial investigations should also help us to understand what sort of additional skills or training would likely be required in order to make the most of these new opportunities.

With one of the lengthiest average times to qualification around, it's probably safe to say that actuaries recognize the importance of education! Despite this, it is relatively unusual for qualified actuaries to take up full-time roles in education. To some extent this is beginning to change with the growth of university-level actuarial programmes, partially or wholly funded by the profession, in both the United Kingdom and the United States. We feel, however, that there is potential for greater actuarial involvement in education and are keen to explore models that might encourage and allow actuaries to contribute more to this area. Potential solutions could involve, for example, developing more possibilities for actuaries to combine a part-time role in education alongside their day job.

Whilst we may arguably be about to enter a golden age of opportunities for actuaries, it is probably also true that never before have we been faced with so much competition from other types of professionals with skill-sets similar to our own. In the United Kingdom around 84 percent of FTSE 100 companies have an ICAEW[1] chartered accountant on the board of directors. Management consultants are increasingly utilizing sophisticated quantitative techniques to assist their clients in making the most of their data. The CFA has done a great job in establishing itself as the credential of choice in the investment industry. "Quants" and financial engineers dominate the development of financial models in investment banks. Most employers in most industries have heard of the MBA and are, at least to some extent, aware of the skills and benefits that a person equipped with that qualification might bring to the company. Can we say the same about our own profession? What exactly are the perceptions of actuaries amongst non-traditional employers and how do we best express our value proposition to them in the future? These are questions that we hope to be able to address as part of our research.

In an increasingly global and fast-moving economy it is important that actuaries work together to promote our skills and maximize our potential as a profession. In the words of Charles Darwin, "It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change." If you would like to contribute to our research please do get in touch; we would love to hear about your experiences and your contribution could help ensure that our profession continues to remain influential and relevant in the future. ■

Patrick Chaaya is a Fellow of the Institute and Faculty of Actuaries in the United Kingdom and founder of Sharpe Intuition Ltd. Patrick can be contacted by email at *patrick.chaaya@sharpeintuition.com.*

ENDNOTE

1 IVCAEW stands for Institute of Chartered Accountants in England & Wales. Source of figures: ICAEW member data as at 1 Jan 2011, FTSE 350 data at December 2010.

Repeating Entrepreneurial Success

By Stephen James

Appreciative Inquiry is an approach to work that says organizations will tend to change in the direction on which they focus their analysis. So an organization which analyzes its problems will continue to find problems. An organization that does its best to understand what it does well will build on successes.

Many entrepreneurs will relate to a situation where they have experienced success in their business. For the entrepreneur, success is usually attained through something for which they are personally responsible, whether it's a product or service. Entrepreneurs, at first, will recognize success based on their own particular skill set, experience and work ethic. This can apply to the one person startup company, or the person working on a project or business unit in a large company. What should the entrepreneur then do when additional opportunities present themselves that push the company or individual to stretch beyond current capacity?

Simply put, this requires growth and the next successes may have to be achieved with the support of other members of the business team. Some of the things required to get to this goal are counter intuitive and involve the entrepreneur taking time away from the actual delivery of business to support the rest of the team. In fact, if done well, this work can result in the entrepreneur being called "management," ironically an anathema to many entrepreneurs!

This article will discuss, at a high level, my experiences in achieving this, with more detailed discussions to come on each topic in future articles.

ADD BODIES

As an entrepreneur, I know that the saying "if you want something done, do it yourself" is a truism. The entrepreneur wants to be involved at each step and wants to provide the critical talent input. Even so, if the business is to grow, then clearly they have to step back and "let go." The work needs to be parceled and handed to people the entrepreneur can trust. As the team grows and specializes, the people added will inevitably bring skills, experience and talent that the team did not possess, making the team better and stronger.

Finding good people can happen in many ways. The traditional approach through recruitment, interviews, head hunting, etc., has brought good people to our company. But some of our best hires come through much different avenues:

- Intern or co-op student programs offer both the employer and employee the opportunity to test drive the work relationship.
- Word of mouth. If a valued co-worker, business contact or friend is willing to recommend and say good things about someone, that's a good sign they are worth your time.
- Dumb luck. You can meet people in unexpected places. One of my favorite hires was of a person who I met while she was serving my table at a restaurant. That day, I had no idea she had a master's degree and was one of the smartest, hard-working people I would meet. She overheard me talking about the business with my lunch companion, took a chance and passed

me her CV. Fortunately for both parties that was a day I remembered my own advice to expect the unexpected.

Do not be afraid to challenge new hires. When challenging team members, an expression I frequently use is “here’s your leash, don’t hang yourself.” We haven’t always been successful with this approach, but the successes far outweigh the times we have regretted it. People will be hired for a particular role. Most people will do fine at a “job.” But, when presented with a possibility for personal growth, many will take the work and find an “opportunity.”

WRITE IT DOWN

If you have found good people, they want to work and succeed. One of the most valuable tools we have provided members of our extended team is documentation of how we do our work. In my experience, this is among the hardest things for an entrepreneur to do. It is often counter intuitive to take time away from delivering to customers to write down how it is done. For the good people you’ve found to understand their business and initial roles, they cannot simply rely on verbal guidance or, worse, floundering on their own. Documenting how the work is done is a critical first step in providing support to both new and long-term members of the team.

In a small team, documentation might be a list of contacts, or a step-by-step list on how to provide certain services. As the team grows, documentation could include empty templates for certain work, for example, documents, spreadsheets and databases. At a certain level of team maturity, the documentation becomes more rigorous and provides technical guidance in specific areas, such as project management or quality assurance. This guidance will eventually evolve into a robust set of standards and practices for the business that can be used and developed for years by team members completely removed from the original team.

In conclusion, entrepreneurs can continue to grow their business by recognizing the need to add good team members. Team members should be empowered to use their own skills and knowledge. They will grow the business when the knowledge that generated success in the first place is formally passed to them. ■

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