

Singapore Retirement Conference 2006

Notes for Yves Guérard, Secretary General,

**At the Dinner hosted by the Singapore Actuarial Society
October 9, 2006**

Actuaries in the year 2036

Honored guests and dear colleagues,

Many of you have been enjoying the Retirement Conference but let's break away a moment from current issues and allow me to celebrate your 30th anniversary by sharing my vision of our profession 30 years from now on the evening of October 9, 2036.

I wish to stress that I have now removed my hat of Secretary General and that this vision is my personal vision, not necessarily that of the IAA or any of its Officers even though I cover both the future of the profession and that of the IAA which I see as highly correlated. By profession, I mean of course the global actuarial profession, a virtual entity that comprises all actuaries and their associations

A vision of strength, growth, expansion, diversification

The evolution of the profession has driven the evolution of the IAA so we can look at what is happening within the IAA as an indicator or a proxy for the evolution of the profession. From my vantage point as Secretary General, I have formed a vision of a possible future for the global actuarial profession.

In the last decade, the profession has expanded rapidly in emerging economies including those rediscovering the market economy. We have admitted 17 Full members since 1998 and many of our 23 Associate members did not exist at that time. But we are still missing 4 of the 11 countries with a population over 100 million. We cannot increase the number of Full member

associations by 45% every 8 years, we would run out of countries, but doubling to 110 Full members is not a dream as it would reach down to countries with a GDP of \$22 billion and above, the level of Estonia, which is already a Full member.

What I see is a profession that has multiplied by a factor of 5 to reach maybe 220 000, with twice as many Full member associations including the 4 countries with more than 100 000 000 people not yet members. The profession is more diverse geographically and cover a wider variety of cultures, legal systems and economic structures. Actuaries are not as concentrated in common law or OECD countries, and a larger proportion would have been trained by universities. There is a dramatic drop in the concentration: only 30% of all actuaries are in the top 10 countries, which currently are all OECD members, versus 85% now.

Leveraging their high qualifications and strong professional standards, actuaries will make an optimal use of para-actuaries to meet on a timely and economical manner the exploding demand for actuarial input in our riskier world. The distribution between areas of practice is quite different with life having lost its relative dominance by comparison with non-life and with sizable practices in Enterprise Risk Management, pension/social security, investments, health and compliance.

If I try to quantify my vision I would project 50 000 actuaries in each of Life and Non-life, 50 000 for Enterprise Risk Management and Financial actuaries which may be an overlapping practice area, 30 000 Pension and Social security actuaries, 20 000 actuaries in each of Health and what I will call "Compliance". Given there are 3 Types of actuaries, those that cannot count, and those who can count, I hope it adds up to 220 000 and that I have not demonstrated I am a Type I actuary!

An uncertain future

I paint an optimistic view where the number of actuaries has more than quadrupled, they meet high standards, cover wider fields and geographically the profession has become fully global.

But many factors can drive our future and unfortunately there is a margin of uncertainty in my vision as crystal balls come with no guarantee. There could be another possible future, that of a

protectionist profession that resists change and the pull to excellence to remain confined in its historical areas even though they are economically shrinking. It does not invest much in research and education, it prepares the next generation of actuaries for Solvency I or II, not for Solvency IV or V. In that uncertain future, actuaries focus on mathematics and computer techniques, cultivate spurious accuracy, neglect strategic societal issues, forget about communications and price themselves out of the market so that the growing demand is met largely by actuarial technicians under the direction of accountants, asset managers, risk managers and supervisors.

But when I look at what actuaries collectively have achieved in the last 10 years, I am persuaded that this can be only a bad dream. I am confident that our leadership can preempt the more glorious vision and ensure it will become our more certain future. Let's see in greater details how we can walk the profession to the sunny side of the wall!

An ambitious future

If we look at the changes that occurred after 1995, by comparison with the changes over the first 100 years, it is obvious that there has been a quantum jump in the rate and the nature of change.

One of our Australian members, Jules Gribble, had prepared some projections ahead of the Paris Congress. Although it is still at a first stage of approximation, it has an indicative value and I adopted them to quantify my vision. His projection of current unsatisfied demand for actuaries based on average density of actuaries in relation to GDP in developed markets calls for twice the current total number of actuaries of around 43,000. With an annual increase in the supply at twice the current rate, it would take about 30 years to match the demand estimated to reach 220,000 in 2036 on the basis of actuarial density in relation to projected global GDP.

For comparison purposes, there are now about 67,000 Chartered Financial Analysts compared to about 10,000 in 1990, indicating a much superior annual rate of growth of about 13% for CFAs relative to actuaries. The total number of actuaries is dwarfed by the number of doctors at 9.5 million, engineers at 6.5 million and accountants at 5.5 million.

Concentration

Another aspect of the vision that I mentioned is the reduced concentration of the profession. The top 3 countries, USA, UK and Germany represent 62% of the FQA; the top 5 would add Canada and France to reach 72%, and the top 10 would add Spain, Japan, Australia, Netherlands and South Africa, bringing the total to 85% of all the FQA's in the world.

An interesting observation is that of the 11 countries with a population of over 100 million, only 7 are Full Members of the IAA, of which only the USA has a large number of actuaries. There is, as yet, no accredited association in the 4 others which comprise China, Bangladesh, Russia and Nigeria. But if we claim a stronger correlation with GDP, we do better: we miss only 2 of the top 10 that is China and Russia! And I would think not for long.

The Swiss Re 2005 Sigma publication on premium density per capita and penetration in % of GDP in the various countries shows Pakistan, Bangladesh and Nigeria as the bottom three on the list of 62 emerging markets. Some see there a hint that cultural or religious factors may influence the demand for life insurance in some of these large countries and presume of a correlation with the prohibition of fixed interest as an obstacle to actuarial methods. A look at past history indicates this prohibition is not a new concept. Interest has long been associated with « *usury* » and thus prohibited as an anti-social concept. Induism, Buddhism, Judaism, Christianity and Islam have been unanimous in their contempt for usury at a time where it applied mostly to personal consumption loans between very unequal parties. When Islam adopted that prescription over 14 centuries ago, it was then the prevailing concept. This prescription is clearly not an obstacle as actuaries in many countries have adapted to this different risk sharing approach. Malaysia is a nearby example and other predominantly Muslim countries show a greater insurance penetration. The progress in the availability of Syariah products could also mitigate the religious or cultural factors.

The Roman Empire had brought the Civil code to a majority of European countries from where it migrated to Japan and a number of developing economies, including Indonesia. The British Empire exported the Common Law to a substantial number of countries

around the world. Actuarial density has been growing in both areas. The next frontier appears to be markets under the Syariah legal system. Therefore the actuarial profession is likely to expand in a larger number of countries more diverse by their culture, legal system and socio-economic development.

Pensions and Investments

Despite the often overstated partial switch from DB to DC, including under the term “pensions” the various forms of social security, I foresee a growth of the demand for pension actuaries to manage complex risks including investments. Current low retirement ages are unsustainable as longevity increases. Creativity will be needed to manage the transition to higher retirement ages, address gender issues, more flexible forms of retirement and equitable pay-out options that favor income over inheritance.

Both the Life and the Pension business converge towards being large financial institutions requiring sophisticated long term asset management including the control of mismatch. I thus foresee a growth of actuaries in Finance, greater attention given to new and emerging disciplines (such as Financial Economics), more emphasis on asset/liability management and a trend to stochastic approaches and modeling.

Non Life

But where I foresee a more dramatic change is the growth of the non-life area. We are all living in a more risky society where, from Chernobyl to tsunamis, natural catastrophes and man-made disasters seem to be on the rise. In a less dramatic way, we are facing a greater variety of ordinary risks associated with the new frontiers, new technologies and bio-technologies, new materials, genetically modified food and new living styles.

The IT revolution has exponentially transformed not only financial markets, but also the way we operate trading networks and distribute goods, services and associated risks, including diseases, internationally. Our more sophisticated world is efficient and productive, but it has also become more complex and vulnerable to a wide variety of new risks. Longer tails and greater sophistication in the techniques for pricing and reserving as well as powerful

computers have combined to leverage the value added by actuarial expertise for non-life companies and reinsurers.

. Supervisory authorities in many countries are discovering that solvency can benefit from actuarial inputs in the non-life area as well. The World Bank, the IMF, the Financial Stability Forum push for greater financial stability in emerging economies where the priority need is for non-life actuaries

Even provisions for catastrophic events, man-made or natural, respond to sophisticated analyses. I attended some sessions at the 28th ICA in Paris that changed my perception of the uncertainty of the uncertainty in that area. I am thinking in particular of a presentation by Paul Embrechts on Modeling extremes in insurance and finance. Catastrophes are becoming big business: Sigma reports \$83 billion insured losses in 2005 out of total losses of \$230 billion, so there is still room for expansion of the industry. This \$83 billion represented 6% of the total non-life premiums for 2005 so the gap in coverage is of the order of 10% of premiums and a good part of it is here in Asia!

Health

What about Health? That practice used to be simpler and largely an annex to the Life practice mostly coming under Group Insurance. Health considerations enter in the marketing of differentiated life and pension products. Disability-free life expectancy is a new planning tool. Although illogical, we paid great attention to pre-financing retirement income, but post-retirement health benefits were forgotten about. That is until longer life expectancies meant that retirees became a large percentage of the active work force and accounting rules forced the recognition of post-retirement benefits other than pensions. The larger component of medical and hospital expenses is in the last year of life, what some call the cost of dying. Well, now more and more people die after retirement rather than before. Employers are also more exposed to bankruptcy, cross-border mergers and technological changes, making the financing of post retirement health coverage by the former Employer even more of a chance event.

In many countries where the government used to cover retirees health costs from the annual budget, reality has taken over as

longevity and technological innovation combine to push costs up and up. This has led to a greater share of the burden being shifted to the private sector, the individuals, their employers and their insurers. Optimization is called in to help control costs driven by technological innovation and ethical issues: actuarial expertise becomes increasingly relevant. Thus aging and demographic issues are now widening the practice in the area of post retirement health care as they did earlier for retirement income.

Risk - the new frontier

But the greater revolution is likely to be in the broader area of risk. Risks are not only financial or investment risks, but can also be operational, systemic or political, meaning they are driven by socio-economic changes.

The impact of undesirable events can be both emotional and financial. Reducing the likelihood of these events helps relieve emotional pain. Some events, such as death, cannot be totally avoided. Reducing their financial impact is very important. Actuaries are experts in evaluating the likelihood of future uncertain events, designing creative ways to reduce the likelihood of undesirable events, and mitigating the impact of undesirable events that do occur.

Actuaries have defined themselves for years as the experts in the management of risk but have left a large part of the field to non-actuarial risks professionals. PRIMA and GARP have shown a spectacular rate of growth. Lately there was an awakening of the actuarial profession. 2005 has seen the creation of an Enterprise Risk Management International Institute, ERMII, as a joint initiative of a number of IAA member associations and 12 universities from the USA, Australia, China, UK and France. The Society of Actuaries, in partnership with the Casualty Actuarial Society, has adopted an ERM strategy which aims to *“further and establish the position of the actuarial profession as the preeminent profession in the field of enterprise risk management”*. One component of this strategy is to expand the influence of actuaries by bringing more people and areas of practice into the profession. Will we see a revival of the “Big Tent” concept whereby the actuarial profession would aim at being more inclusive and integrate, for example, risk managers and financial engineers under a common umbrella with a syllabus adapted to greater diversity?

Please be stochastic!

The call for excellence will entail the upgrading of the syllabus, for example in the area of financial economics and stochastic modeling. Although we have lived many years under the umbrella of averages and standard distributions, we take advantage of computational capacity and new techniques that allow deriving a distribution. This need is also greater as we wish to measure and control risks. The world has become “less normal” and a professional approach requires that we make better use of all the available information. We need to catch-up with our cellular multi-purpose phones and go from plain flat black & white to multi-color 3-D pictures! We must remove two letters from the proverbial saying “*The devil is in the details*” to create a new actuarial saying “*The devil is in the tails*”.

Communications

But it is not only actuaries that will need to be trained to replace deterministic estimates by stochastic estimates showing a range and a degree of confidence. It is also the users of actuarial advice: actuaries will need to continue to beef up their communications skills. Future actuaries need to be seen not users of sophisticated mathematical and statistical tools but as user-friendly experts, thinking out of the box, who are good communicators and good advisors for decision-makers in business or public policy.

More and more, the actuarial profession is entering the world and contributing to the quantification of policy options, thus putting more actuarial expertise to the service of the wider public interest. Again, especially in public practice, actuaries will need to be good communicators as they will need to produce user-friendly explanations of policy options and fend off the skeptics. It is almost a given that actuaries bring bad news; they have to explain that the dream is not sustainable, that there are no free choices only trade-offs. Communicating bad news requires greater skills. Thus Communications should join Professionalism as a core non-technical subject in our syllabus. Or maybe it should be understood as a mandatory component of Professionalism!

The Scientific Sections and the Congresses

The actuarial profession depends also a lot on the IAA Sections to maintain and develop its core scientific body of knowledge and practice. The Sections publish the ASTIN Bulletin, the scientific publication of the global profession, which was recently listed by the international publisher Thomson ISI. The IAA serves its members through six scientific Sections covering various professional sectors and serves the public interest through the Actuaries Without Frontiers, or AWF, Section.

The first Section ASTIN (Actuarial Studies in Non-Life) was created in 1957. Then came AFIR (Actuarial Approach to Financial Risks) in 1986, IACA in 1999 and later in 2003 Pension and a Health Sections. There was no Life Section until the end of 2005. An interpretation could be that Life was so dominant that the IAA was perceived as a gigantic Life Section and only the other areas, being marginal, needed a special home.

It is almost 40 years ago in 1968, that the *Comité Permanent des Congrès* changed its name to IAA but Congresses have remained an important activity for the global profession. I chaired the Scientific Program Committee for the Montréal Congress in 1992 when actuaries discovered the IT revolution. So I can tell how different our Congresses have become, offering a multi-track cafeteria with a choice of 110 sessions at the 28th ICA in Paris earlier this year. They are now a wonderful opportunity for the profession to come together on an international scale, to enlarge our body of knowledge, to exchange tools and methodologies and to publicly address the major global issues of the day, thus serving both our professional needs and the public interest. On a regional scale, this Singapore 2006 Retirement Conference is one more demonstration that we are professionals serving the public interest.

A more actuarial framework

The ongoing major revision of the accounting and reporting framework is driven by an initiative originating from the Financial Stability Forum for protecting the banking system around the world from shocks and secondary effects resulting from insolvency events. The electronic revolution has interconnected the financial markets globally and fears of domino effects motivated efforts to develop financial stability nets that also encompass pensions and

insurance. The aim is better financial security and actuaries are very much part of the solution. Repeated economic crises have made institutions more nervous about solvency and sustainability. Risk reduction and the search for greater financial stability are pushing regulators towards risk-based supervision, which will call for more actuarial expertise in the pension and insurance sectors.

This evolution not only increases the demand for actuaries within both the public and private sector, but more importantly increases the demand on the profession for more highly qualified actuaries, professional standards and better governance. With the shift to Risk-Based Supervision, actuaries are becoming a key line of defense against financial shocks. Maybe we need to anticipate the formalization of a new practice area of “Audit actuaries” or “Regulatory actuaries”, or perhaps a better name would be “Compliance actuaries”, working across the border of the public and private sectors. But there are also other consequences and I foresee an increasing demand for transparency and more openness in the setting and enforcement of standards, codes of conduct and ethics.

The 1998 restructure

To better appreciate how much we have changed, let's step back to 1895, the year the IAA was born in Brussels under the name « *Comité Permanent des Congrès d'Actuaires* ». It was then an association of individual actuaries having as a prime objective the organization of International Congresses of Actuaries once every 4 years.

The primary reason for restructuring the IAA in 1998 was to better support actuaries in their efforts to establish and maintain uniformly high standards of practice and qualification and to encourage high levels of professionalism for actuaries around the globe to ensure that the public interest is served. In response to the accelerating evolution of the global socio-economic environment the aims of the IAA have thus become more diversified, more universal and more ambitious

For over 100 years, the IAA Council used to meet once a year for one session on the last Saturday of September in Brussels; Council and Committee now meets for over 3 days twice a year in different countries traveling to all inhabited continents. The Committees jumped from one before the restructure to 12 in 1998.

There are now 21, plus some Task Forces and Sub-Committees. From about 8,000 actuaries prior to the restructure in 1998 the membership has jumped to 30 000 with the restructure and has grown at 4% per year to reach nearly 43,000 as more associations joined in.

The increase in IAA activities is very much driven by the demand for enhanced governance, representation at the international level, upgrading of educational requirements, and development of guidance for actuaries. The restructure has proven to be very timely in providing the human and financial resources to face the growing need for professionalism, high standards and qualifications, expert advice to relevant international entities and service to the public interest. The annual budget more than tripled from C\$256 483 in 1998 to a projection of C\$ 920 713 for 2007.

The IAA has become the international professional, educational and research organization of actuaries and actuarial associations speaking for the global profession to international standards setting or donor organizations such as the IAIS, the IASB, and the OECD, the World Bank, ISSA and other international entities.

Our public mandate

Actuaries take seriously their responsibility to the public interest and recognize that their unique blend of skills can be enormously beneficial when applied to the public good. Through their national associations, actuaries provide voluntary assistance to national and regional governments, analyzing legislative and regulatory proposals, advising on social trends and suggesting solutions to a wide range of social problems. Through the International Actuarial Association, actuaries are offering support to international regulatory, financial, and accounting and public assistance organizations. Our Solvency Assessment Working Party has produced in 2004 a 185-page Research Report entitled “*A Global Framework for Insurer Solvency Assessment*” that is a seminal contribution to an actuarial area that is critical for the stability of the whole financial services industry.

Some of you are likely aware of the deep revisions taking place in financial reporting and in the determination of liabilities and solvency requirements. Public Statements by the IAA, mostly directed to international institutions, used to be rare and

exceptional but now average 14 per year. To cope with tight external deadlines we have adopted a Fast Track Procedure used for 27 of the 30 Public statements issued since June 2004. Two others are still underway.

The IAA has been working in support of convergence which we believe would enable the actuarial profession to better serve the public interest. Our Insurance Accounting Committee has addressed the IASB-FASB issue of convergence and I just quote a few sentences from their statement:

“Finally, the IAA believes that it is essential that a single international prudential financial reporting model be developed that meets the characteristics outlined above. The IAA is willing to provide whatever assistance it can to both the IAIS and the IASB to derive a regulatory model based on, but not identical to, future IFRS developed by the IASB. The IAA has long advocated that the merits from such a combination of general purpose international financial reporting model based on IFRS, together with international regulatory reporting itself based on a soundly constructed IFRS core would be of immense benefit both to insurers and to the financial markets as a whole.

.....
Regardless of whether or not a common financial reporting platform is developed, the IAA reiterates the need for comprehensive reconciliation and explanation of any differences between general purpose and statutory financial reporting.”

A more diversified more global profession

Thanks to the convergence of regulatory requirements and of the qualifications standards for actuaries, mutual recognition will be general even where not mandated by Common markets or Free trade agreements. That may lead to more overseas outsourcing across cyberspace to take advantage of time differences and cost structures. Pricing and reserving would no longer dominate the activity of actuaries who will be perceived more as business specialists in risk management. Thanks to the communication skills of the new generation of actuaries, decision makers in business and public policy will consider actuarial stochastic projections as more essential than opinion surveys to support their major socio-economic decisions.

Regulatory requirements, time constraints and cost limitations may generate pressure to more systematically use “para-actuaries”, that rely on a lower level of qualification, for some tasks. Thus, I foresee more fundamental changes that would push highly qualified FQAs to the top layer of a wider and more differentiated profession.

Although I am not proposing the medical profession as the model, I will point to the difference between Paramedics, General Practitioners and Specialists. We may operate in the reverse fashion with the first level being actuaries with narrower qualifications based on specialized syllabus and requiring a shorter travel time. At the top we continue to have FQAs with wider qualifications, able to take a comprehensive view of the issues and propose integrated solutions to a wide variety of strategic risks. This approach allows a more rapid expansion of the offer of actuarial services at a more competitive cost.

This more inclusive approach may not be an impossible dream: the 5th Enterprise Risk Management Symposium to be held in Chicago on March 28-30th 2007 is co-sponsored by PRMIA, the Society of Actuaries and the Casualty Actuarial Society; the 2006 Symposium was attended by over 550 actuaries and risk management professionals.

Education

This leads me to another growing public mandate: the education of the actuaries of the future. Education is a strategic activity for the credibility of the profession and 2005 was a threshold year for the implementation of the IAA core syllabus and the upgrading of standards.

If we are to add over 175 000 actuaries over the next 30 years, what the profession does in relation to the education and examination will be a key determinant of their quality, At present the IAA prescribes a syllabus and Guidelines, but there is no attempt to measure or ensure minimum standards of achievement through, for example, monitoring examinations. I believe in the common saying that *what is measured is what gets done*. The lack of wider mutual recognition between Full Member associations is an indicator that our members perceive wide disparities in

qualifications. We still have a long journey left on the road to excellence.

We are a knowledge-based profession, we have been weaker than we should have been on research, slow in adopting some new concepts and techniques and there is wide variation in the scope, depth and quality of the education of actuaries.

We have come a long way since 1998, where the condition for membership was only to **support the study** of minimum educational guidelines. The new 2005 minimum IAA syllabus requirements have generated a greater awareness of the level of effort needed to operate a good education and examination system. In many countries, we make very limited use of universities financed by our taxes to educate and examine actuaries. These comments apply with equal force to Continuing Professional Development, a challenge the IAA Sections help tackle through Seminars and Colloquia in addition to contributing to the research that feeds into education material.

The IAEP

Thanks to an offer of partnership by the World Bank the IAA is undertaking a major study of the feasibility of developing a country-neutral International Actuarial Education Program (or IAEP) that would be available as an option to all associations around the world. It would be compliant with the IAA 2005 syllabus and comprise education material, a range of delivery options, and setting and administering uniform exams world-wide. This is an ambitious target, but I will assume that we can attain this objective by 2011.

The IAEP would cover only what is now often called the non-country specific exams: nevertheless, it would greatly reduce the burden on each association and so free up scarce resources to be applied to their country specific requirements, for example those driven by local legislation and financial markets, commercial codes and social security programs. Combining effort and eliminating duplication should also reduce unit costs.

I believe the IAEP will be a development tool as well as a plus for many of our existing associations, especially those with less than 500 to 1000 members, which is the large majority of our

associations. It will also obviously be a plus for the less actuarially developed areas.

This universal access to actuarial education combined with the increasing convergence in the rules for accounting and regulatory reporting will result in greater convergence in the qualifications of actuaries as the global profession respond to the call for excellence!

I learned recently that “*the uncertainty of the uncertainty is typically greater than the uncertainty of the estimate*”. There must be exceptions to this rule because I estimate with great certainty that you will all enjoy a relaxing evening and therefore a productive day tomorrow!