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Feature Articles
2006 Volume 12 Issue 1



Martin A Stevenson BSc, FIA, FIAA
President of The Institute of Actuaries of Australia, 2006

2006 Presidential Address
The Evolution of the Profession

*M A Stevenson**

Presented to The Institute of Actuaries of Australia
Melbourne, 12 December 2005
Sydney, 14 December 2005

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1 Introduction and Summary

1.1 Introduction

It is an exceptional privilege and responsibility to be elected as President of the Institute of Actuaries of Australia.

It is a privilege because the presidency confers the role of speaking for and representing an outstanding group of highly talented committed professionals.

It is a responsibility because the role demands that the past heritage be preserved and that the future of the profession be enhanced. A presidency is not a discrete event in itself; it is part of the profession's long journey.

To travel hopefully is a better thing than to arrive, and the true success is to labour. - R. L. Stevenson

Change is inevitable; the rate of change in society generally is increasing. Change for the actuarial profession can be revolutionary through external event shocks or through visionary thought leaders.

However this Presidential Address is about evolutionary change. Specifically it is about the immediate past and the future developments of:

- maintaining our leadership in traditional actuarial areas and expansion into further fields (attaining the vision); and
- raising the level of our professional standards, increasing our accountability and transparency, and deepening our commitment to serving our clients, employers and third parties in the public interest (professional governance).

The main messages in the Address are summarised in the remainder of this Section one. Time poor readers need not continue beyond this summary!

1.2 Vision & Mission Statements

Our vision statement is:

To position the profession so that whenever there is uncertainty about future financial outcomes, actuaries are sought after for their valued advice and authoritative comment.

This vision statement serves us well and provides clear guidance for future directions.

However it is an appropriate time to review our mission statement. As outlined in section 2 the mission statement could be strengthened in respect of serving our clients, employers and third parties in the public interest, providing services of the highest quality and enforcing professional standards (professional governance) and increasing the public's recognition of the actuarial profession's value (attaining the vision).

1.3 Our Membership and Practices

A review of recent membership statistics is encouraging. Overall the level of our membership is increasing, albeit recently the rate of growth is lower than five to ten years ago. When we look at recent membership trends by practice, the trends are precisely in line with our vision – with broad maintenance of our numbers in traditional areas and with growth in new fields. The current statistics reveal a long anticipated milestone: General Insurance has become our second largest practice, passing Superannuation.

A brief overview of each of our practices in section 8 shows a consistent theme: in every practice there is an abundance of opportunities for members of our profession. Anecdotally this is confirmed by greater difficulty currently being experienced by employers to recruit actuarial staff, compared to a few years ago.

There is, of course, no room for complacency: individually and collectively we must continuously demonstrate value to our clients and/or employers.



1.4 Pre-Qualification Education

A fundamental function of the Institute is to provide education. The recent past initiatives in education and future plans are all about providing a solid platform for our traditional areas and providing opportunities and support for actuaries in wider fields. They are directly relevant to attaining the vision.

2005 was a year of significant change in pre-qualification education.

The new Part III Course was introduced with the goals of assisting students to pass in a shorter time period (whilst maintaining standards), to equip students with more relevant skills for the commercial employment environment and to deliver education with less reliance on volunteers. Whilst there have been some teething problems in the first year, I am confident that our goals will be achieved.

An independent review was conducted in 2005 into the low pass rates in Part III.

The review confirmed Council's view that current pass rates are unacceptably low.

A number of recommendations have been made that include setting the aims and objectives of all courses in terms of performance objectives, greater guidance to students and more assistance to educators. The recommendations will be implemented over the next two years.

Important changes that should be implemented in the near future include deepening the content of our Finance course so that actuaries can more effectively operate in Banking and Finance, introducing a Health course to support our practitioners in their statutory roles in Private Health Insurance and broaden our opportunities in Health Financing generally, and the introduction of

a Risk course to both enhance our current roles in risk management and extend our roles to exciting new frontiers.

In Australia we reserve the title 'actuary' for members who have passed all subjects including specialist subject(s). There is an alternative: we could reserve the term actuary for someone who has mastered all the key components of actuarial science, but who has not yet started to offer actuarial advice. Thereafter an 'actuary' would need to successfully complete the relevant specialist course to begin offering actuarial advice in a particular industry.

This change would clearly enhance our prospects of attaining the vision, and is worthy of serious consideration.

A particular priority of mine is for the Institute to identify students who commence actuarial studies and are particularly suited to become actuaries, but who are lured away to careers in Finance where the actuarial qualification is not recognised as relevant. The more difficult task then is to devise meaningful strategies to retain some of them in the actuarial fold – a likely direction is to provide support and facilitation for penetration of new markets.

1.5 Professional Governance

We must be realistic: over the past few years actuaries in Australia and (more particularly) overseas have received adverse publicity. An essential asset of any profession is to receive and be worthy of a deep and abiding trust from the public.

This has generally been the case with actuaries, but we must always be conscious that trust takes many years to be gained, and can be destroyed in an instant.

I am certain that the vast majority of actuaries act with integrity; in the words of Justice Owen (Commissioner of the HIH Royal Commission) they will ask: 'is this right?' However the public demands, and the actuarial profession should enthusiastically embrace raising the level of our professional standards, increasing

our accountability and transparency, and deepening our commitment to serving the public interest (professional governance).

The statement on Internal and External Peer Review and the Professional Standard (External Peer Review – General Insurance and Life Insurance) will be finalised this year; the revised Code of Professional Conduct and the revised Disciplinary Scheme should be in place in early 2006, as should a revised Professional Standard on Continuing Professional Development.

These are ‘value add’ rather than irksome ‘compliance’ documents. Our profession becomes stronger when we lift the bar in respect of our professional governance.

These changes to our professional governance are highly significant. As they become available, all members must read the new Code of Professional Conduct, the statement on Internal and External Peer Review, the Professional Standard on Continuing Professional Development and the Disciplinary Scheme. All actuaries practicing in General Insurance and Life Insurance must read the Professional Standard (External Peer Review – General Insurance and Life Insurance).

I have long considered ‘Senior Actuaries’ to be an under-utilised resource within the Institute. The changes in our professional governance provide abundant opportunities for Senior Actuaries to show leadership and to:

- Instill a culture of consideration of the public interest whilst serving clients, employers and third parties.
- Make members aware of their potential ‘whistle-blowing’ responsibilities.
- Ensure that all members are aware of the new requirements under the Code of Professional Conduct in respect of actuarial reports.

- Analyse the work undertaken by his or her firm (beyond that covered by the Professional Standard: External Peer Review – General Insurance and Life Insurance) to determine where it is appropriate to recommend External Peer Review.
- Become familiar with the new Disciplinary Scheme so that he or she is in a position to support other actuaries in the firm.
- Ensure that proper recording systems are in place for CPD and assist in monitoring the activities of members.

1.6 International Developments

The global actuarial profession is small and there are pockets of extreme shortages of actuaries, particularly in developing countries.

There are material advantages in the various actuarial professions in different countries pooling and harmonising resources, particularly in education. At the very least I can see no merit in different countries having different Part 1 syllabi. Potentially, greater global co-operation could provide Australia with the opportunity of becoming a Regional Centre of Excellence in Asia Pacific in respect of education.

Australia has a heritage of being involved in Asia and New Zealand, but developments have tended to be ad hoc rather than planned. It is necessary and important to review our relationship with our near neighbours.

1.7 Financial Modelling

Section 7 of this Address is simply a reminder of the importance of financial modelling to actuarial work.

Financial modelling has been the foundation of many actuarial endeavours, and is highly prevalent in the day-to-day work of many actuaries. We should actively seek ways to improve our financial modelling skills.

1.8 Corporate Governance

Over recent years the span of actuarial science and practice in Australia has grown enormously in breadth, depth and complexity. It is increasingly difficult for the President to cover all aspects of the task in one year. Should we move to a two year term for the President?

We live in a world of increased accountability and transparency. Would it make sense for one member of Council to be a non-actuary?

1.9 The Evolving Actuary

Both to attain our vision and to strengthen our professional governance, I predict and hope that actuaries will evolve in the following way to:

- become more consummate communicators;
- develop a more global outlook;
- place a greater emphasis on skills rather than practice;
- work within a more explicit and transparent professional governance framework;
- have a significant presence in Risk Management; and
- become more involved in partnering with members of other professions.

2 Vision and Mission Statements

2.1 Vision Statement

Our vision statement is:

To position the profession so that whenever there is uncertainty about future financial outcomes, actuaries are sought after for their valued advice and authoritative comment.

The vision statement of the American Academy of Actuaries is not dissimilar:

The vision for the actuarial profession, 'The public recognises actuaries as the architects of financial security,' is realised.

The Actuarial Profession in the UK has a similar approach, albeit its vision is more wordy and detailed and is focused on 2020:

Actuaries in 2020 will work in a much wider range of businesses than at present. The actuarial training will be highly attractive as the basis for a career in finance with its distinctive emphasis on questions of financial and other uncertainty. The profession will be known for its objective and responsible views on current issues.

The visions of all these actuarial bodies are similar – it is envisaged that the actuarial profession will be a dominant profession in financial services in the widest sense. The vision dictates expansion rather than remaining in our core competencies of Life Insurance, Superannuation and General Insurance.

Is there an alternative? Of course there is, and the choice is set out eloquently by Sir Derek Morris in his 'Morris Review of the Actuarial Profession: Final Report,' where he is referring to the UK Profession.

The Profession is, in my view, at something of a crossroads. It has for a variety of reasons come under quite intense scrutiny, not least in this review, and will inevitably face change. There is a danger that this might involve retrenchment, a narrowing of focus onto its traditional areas of strength, bolstered by reserved roles, with relatively little innovation in its training, methods or breath of application.

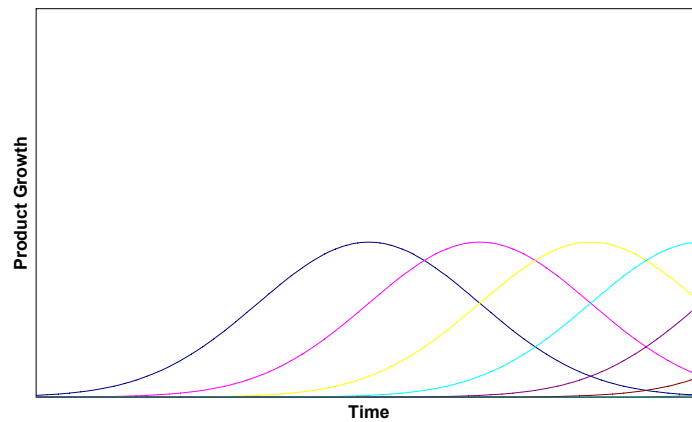
With strong leadership, however, I believe that the Profession can move forward, on the basis of reforms proposed in this review, to fulfill a wider remit in the field of financial risk analysis, bringing expertise, robust technical standards and the

benefits of professional conduct standards to both traditional and new sectors.

The quote above captures the essence of our profession's justification for aspiring to be a dominant player in financial services: our education (both initial and continuing) and our professional standards. These are the foundations of our profession and we must always maintain them to the highest standards and we must always be prepared to evolve them in response to an ever changing environment.

There is another reason for an aspirational outlook: survival. There is a universal truth in business survival that sees expression in such phrases as: 'As soon as we stop growing, we start dying' or 'there is a constant imperative to reinvent ourselves.'

The following graph:



is simply stating that each product or service of an organisation has a natural cycle of growth, maturation and decline. An organisation can achieve sustainability by constant innovation and launching of new products and services.

2.2 Mission Statement

Our mission statement is:

The Institute of Actuaries of Australia (Institute) represents the actuarial profession by creating, expanding and maintaining an environment where the skills of actuaries are widely used and valued.

The Institute

- *establishes and maintains professional standards for the protection of the public*
- *provides pre-qualification and continuing professional education*
- *creates forums for discussion about contemporary and relevant issues*
- *promotes research and the development of actuarial science, and*
- *contributes to and informs debate on public policy.*

A review of the mission statements of other actuarial organisations reveals similar goals, but there are some differences that could be worthy of inclusion in Australia:

- Is there enough emphasis on the public interest? We talk about *protecting* the public interest, but would not a better sentiment be to *serve* our clients, employers and third parties in the public interest?
- There is no mention of our expectations to the provision of services to *the highest quality*. Whilst it is implicit in all our thoughts and actions, would not it be appropriate to incorporate the concept of highest quality explicitly in our mission statement?
- I consider that the first dot point in the mission statement would be improved by amendment as follows. ‘...establishes, maintains and *enforces* professional standards....’

- A further point should be introduced along the lines of *increasing the public's recognition of the actuarial profession's value*. One of the pleasures of the last two years has been my attendance at a number of President's lunches held for members of the Institute. One of the pervasive themes of these lunches, particularly in the Banking, Finance and Investment areas, has been the need for the Institute to increase the public recognition of actuaries, especially amongst employers.

It is an appropriate time to review our mission statement.

3 Our Membership

3.1 Overall Membership

In reading past Presidential Addresses, I have always been interested in statistics about our membership. Hence, I have included the past and present membership statistics here.

The following table shows overall membership:

Table 3.1

Year	Fellows	Year on Year increase (%)	Other Members	Total	Year on Year increase (%)
1992	728		742	1470	
1993	789	8.4	776	1565	6.5
1994	848	7.5	786	1634	4.4
1995	905	6.7	792	1697	3.9
1996	958	5.9	792	1750	3.1
1997	1025	7.0	803	1828	4.5
1998	1082	5.6	963	2045	11.9
1999	1122	3.7	1117	2239	9.5
2000	1177	4.9	1179	2356	5.2
2001	1227	4.2	1308	2535	7.6
2002	1258	2.5	1396	2654	4.7
2003	1296	3.0	1475	2771	4.4
2004	1351	4.2	1534	2885	4.1
2005	1393	3.1	1595	2988	3.6

Thus our numbers continue to grow but the rate of growth has slowed quite appreciatively.

3.2 Distribution by Country

Our distribution by country is:

Table 3.2

Country	Fellows	Total
Australia	1,076	2,353
New Zealand	51	97
United Kingdom	83	143
Hong Kong	59	145
Rest of Asia	59	170
Balance	50	80
Total	1,398	2,988

Fellows in table 3.1 include Accredited but exclude Accredited in table 3.2. A high percentage (22%) of our Fellows work overseas.

The following table gives a comparative breakdown of the type of areas where our Fellows (again excluding Accredited members) work.

Table 3.3

Principal Activity	1992	1997	2002	2005
Life Insurance	224	317	314	357
Superannuation	178	218	154	193
General Insurance	31	94	140	196
Investment	32	73	98	118
Banking and Finance	3	31	43	63
Health Insurance	3	5	13	18
Software	5	5	18	18
Education	10	13	14	19
Management	63	67	45	37
Energy Markets			4	5
Other	58	47	26	56
Not Known			204	145
Total non-retired	607	870	1,073	1,225

The 1992 and 1997 details have been taken from a table in John Trowbridge's Presidential Address. The 2002 and 2005 results have been collated from information requested from members on a voluntary basis. Hence the two sets are not strictly comparable.

It is encouraging to see the 'not known' (ie. non completion of forms) members have declined materially between 2002 and 2005.

3.3 Observations

Observations from the above table include:

- There has been an increase in the numbers in Life Insurance, after a period of being level.
- The rise in numbers in Superannuation between 2002 and 2005 is counter-intuitive, given the decline in stand alone defined benefit funds. There was also an increase in Fellows between 2004 (186 in Superannuation) and 2005 (193).
- General Insurance is confirmed as the growth engine of our profession, and this is the first time where it is shown as our second largest practice.
- It is very pleasing to see the strong growth in Banking and Finance and in Investments.
- Health Insurance is growing from a small base and there is certainly the opportunity for strong growth – provided that actuaries can work in Health Finance generally.

4 Pre-Qualification Education

4.1 Actuarial Education

One of the major pillars of a profession is its pre-qualification education program. The education program must ensure that the new members of the profession are adequately trained in the particular skill set of the profession to meet the needs and

expectations of the users of the profession's services and to meet the expectations of the general public.

If the education system fails then the profession will not survive.

In this section three aspects of our education system are considered:

- The new Part III Education Program;
- The review of Part III Education;
- Future directions.

4.2 The New Part III Education Program

2005 witnessed the introduction of a new Part III Education Program. Features of the new Program include:

- Completion of four courses instead of two subjects. This is intended to assist students to pass in a shorter period of time, and prevent the 'all or nothing' approach of the previous six hour papers.
- Examinations held twice a year. Again, this should assist students to pass in a shorter period of time.
- A compulsory Investments course. Actuaries need to be able to provide relevant and objective advice on both assets and liabilities and to understand the interaction between the two.
- Only one specialist liability subject. This is consistent with international developments in the actuarial profession and is consistent with modern trends generally of ever increasing specialisation.
- A compulsory Commercial Actuarial Practice (CAP) course. This module trains actuaries to combine actuarial skills, actuarial knowledge and judgment to simulated commercial problems. One of the reasons for its introduction is that a fairly widespread criticism of newly qualified actuaries by employers has been that

they are too theoretical – they do not ‘hit the ground running’ as employees.

- For the first time assignments were brought into the assessment program, comprising 20% of the overall mark. This change is consistent with modern education trends and enables certain skills and knowledge of students to be assessed that could not be considered within the confines of a three hour examination.
- On-line delivery of part of course 1 (Investments) to provide students with learning support in a new flexible format and to assist distance education.
- Inauguration of paid Course Leaders to relieve volunteer members of the significantly increased demand of the new Part III format.
- Out-sourcing part of Part III to an external provider (ANU).

In the event, a magnificent effort was made by the secretariat, Course Leaders, our external providers and most especially by the 250 or so volunteers who took part in the year’s education program. In particular the Board of Examiners ensured that the examinations proceeded as planned, despite a doubling of the workload and a sharp reduction in timeframes. Admittedly there were some initial teething problems, but this is virtually inevitable when such major changes are made.

4.3 Review of Part III Education

The pass rates in Part III have been declining in recent years to unacceptably low levels. In December 2004 Council determined that an independent review of Part III Education should be undertaken.

The Institute was fortunate to have the review undertaken by Professor Tony Baker. Tony is Professor of Chemistry and Chair, Academic Board, UTS; Member, NSW Board of Studies; Member, NSW Department of Education and Training Higher Education Advising Committee; Chair, Committee of Chairs of Academic Boards/Senates in NSW and the ACT.

Tony certainly agreed that the low pass rates were a matter of serious concern:

The low pass rates are not consistent with current expectations and performance in university subjects or with pass rates for other professional associations who conduct qualifying examinations (eg. Accountants, Company Directors, Chartered Secretaries, Barristers' and Solicitors' Admission Boards, Psychiatrists and other mental health professionals: information supplied in confidence). The pass rates for Part III subjects are highly indicative of an education program where the expectations of neither the students nor the assessors are being met. Yet there seems to be a level of comfort amongst senior actuaries associated with the course that pass rates should be low. Frankly, it is not enough to contend that professional education is very different from university education or that the level of judgment required goes far beyond simple technical skills. If the education program is working successfully then students should be properly assisted in the development of the appropriate professional skills through the course.

and

Having grown, substantially, the actuarial profession needs a considerable supply of new professionals to sustain growth and balance retirements. The current situation of pass rates trending down to the low twenties (and beyond) is not sustainable in the mid to long term and is entirely at odds with other professional education and university education. There is an urgent need to address this problem.

At the broadest level he considered that Part III scored well in respect of content (that is, newly qualified actuaries are highly competent in the technical skill in the specialty that they have studied) and in the examination process which he considered as being at or near world's best practice. It is in the area of pedagogy (ie. the teaching process) where deficiencies are perceived.

The Report included 29 recommendations. These recommendations can be grouped as follows:

- 1) *The aims and objectives of all courses should be written in terms of performance objectives.* This involves precise statements of the expectation that the course writer has of the student, including some reference to the background knowledge that must be employed. This proposal is extremely challenging to meet, but as stated in the report, the rewards are high:

the skills of a professional actuary will be defined in terms of specific performance objectives, assignments and exam setting will be more straightforward and the students will have extremely clear statements of expectations.

- 2) *Greater guidance to students.* Students should be given more insights into the extent (and difficulty) of the courses, clearer road maps of the courses and more transparency on the expectation of examiners.
- 3) *More assistance to the educators.* Specifics include workshops for Course Leaders and a sharper focus on the nature of discussion forums.
- 4) *Greater integration of the examination and assignment processes.* Essentially this involves bringing the rigor of our long established examination systems to the newly fledged assessment of assignments.
- 5) *Reduce the time pressure on students in examinations.* There is a need to enforce the intention that a good student can comfortably complete the examination within the allotted time.
- 6) *Provide for three year experience qualification.* The intent of this recommendation is to remove pressure on examiners to fail students because they lack judgment based on experience.
- 7) *Include educational activities in CPD credits.* Although the volunteer effort made by Institute members is outstanding, there is always a shortage of volunteers in education. CPD credits for education activities both rewards those who are involved and encourages participation by those currently not involved.

Council considered Tony Baker's report at the October 2005 meeting, and approved in principle its provisions and passed it back to the Education Council Committee for review in detail. Implementation will be carried out by the Secretariat.

4.4 Future Directions

In the paper at the Cairns Convention 'Banking, Finance and Investment Taskforce Draft Positioning Strategy 2005-8', the Taskforce identified an issue:

Resolve whether the profession wishes to position itself as quants or practitioners. In the finance sector we presently fall between the cracks – neither seen as business savvy nor at the leading edge.

Elsewhere in the Report the Taskforce indicated its preference to move to the leading edge: 'Deepen the technical content of the Finance module to bring actuaries to the level of other practitioners (econometricians).'

I endorse this direction for the Finance course.

We have the situation in Australia where actuaries have statutory responsibilities in Health Insurance, but we have no formal education course for Health Insurance actuaries. We did conduct two 3 day CPD programs in Private Health Insurance in 1998 and 2000 but there is still an exposure here for the profession which must be eliminated as soon as possible.

The Education Council Committee and the Health Practice Committee are aware of this need, but past progress has been slow because there is a large demand for actuarial services in Health and a relatively limited supply of actuaries with the requisite skills and knowledge.

Nevertheless we must commit to action, and part of the solution is that we are presenting an up-dated Private Health Insurance Course in 2006.

I believe that we need a formal Health course in 2007. Alternative models that could be considered include:

- 1) Some form of Institute certificate course focused on the statutory responsibility of actuaries in Health Insurance. This would be the most straightforward route, but is not consistent with our normal education framework;
- 2) A Part III course with one module (focusing on Private Health Insurance) provided by the Institute and the other module (dealing with wider aspects of Health Financing) provided by a University. The success of this strategy would depend upon finding an appropriate University course; or
- 3) A Part III course with both modules provided by the Institute. The question arises in this alternative as to whether we have sufficient resources.

After Health Financing, a Part III course on Risk Management is likely to be investigated. Many models are possible, but any program adopted by the Institute is likely to involve an ERMII accredited University.

(As readers of *Actuary Australia* are aware, ERMII is the Enterprise Risk Management Institute International and is 'a non-profit educational and research organisation, initiated by an international group of universities and professional organisations [including the Institute of Actuaries of Australia] with a focus on education, research and training within an Enterprise Risk Management conceptual framework quantitative methods and tools, and best practices.')

Relevantly, ERMII intends to accredit universities that satisfy its curriculum, research and teaching standards. It is intended that students completing an ERMII accredited university program will have the opportunity (upon meeting certain requirements) to receive the certification Chartered Risk Analyst (CRA).

4.5 When is an Actuary an Actuary?

Until recently, actuaries in Australia qualified with two specialist subjects. In future years actuaries will qualify with one specialist two course subject. However, the intrinsic statement to the community is the same: if you utilise the services of an actuary, then not only do you obtain a person skilled in basic techniques who can provide reliable professional advice, but you also obtain a specialist, equipped with the necessary knowledge to work in your industry.

There is an alternative: we could reserve the term actuary for someone who has mastered all the key components of actuarial science, but who has not yet started to provide actuarial advice. These key components would include:

- Our current Part I (ie. the technical foundation);
- The Actuarial Control Cycle, but with less emphasis on examples from the traditional specialties but greater coverage of the broad financial regulatory background;
- The Professionalism Course; and
- Course 1 (Investments).

Thereafter an 'actuary' would need to successfully complete the relevant specialist course (including CAP) to practise as an actuary in a particular industry.

This model is similar to my understanding of the framework of some other professions and of some overseas actuarial bodies.

Advantages of this approach include:

- Actuaries will be equipped to work in wider segments of industry generally. One would expect the number of 'actuaries' to increase, and hence the recognition factor for actuaries would increase. (Indeed this direction for the profession is the key recommendation of the Banking, Finance & Investment Taskforce.)

- It is consistent with the likely direction of the international profession. (see section 6).
- It would encourage members of the profession to consider themselves more as ‘actuaries’ rather than ‘industry specialists’ (eg. Superannuation consultant).

4.6 The Lost Sheep

Excluding the University of NSW (where students are only now entering Part III) approximately 400 students commence actuarial studies through the accredited universities each year. In addition a number of students do Part I examinations outside the university system. Approximately 50 to 60 students qualify through the Institute as actuaries each year. Hence there is an enormous leakage between initial entrants and eventual success in qualifying as an actuary.

Many of those who drop out would not have the ability to become actuaries; many who drop out would have found alternative careers more suited to their aspirations and far from the nature of actuarial science and many are foreign students who return home and join their home actuarial organisation.

However, some of those who drop out of the actuarial course are almost certainly amongst the best and the brightest of our students, but who are lured away to careers elsewhere in Finance where the actuarial qualification is not seen as relevant – even though the core technical training received in their university actuarial course may prove invaluable in their career, and may be the very thing that distinguishes them from other employees.

It is an exciting challenge to identify these ‘lost sheep’ and attempt to devise meaningful strategies to retain some of them in the actuarial fold. If we could graduate as many as ten additional new actuaries per annum, in the course of time our profession would be transformed.

5 Professional Governance

5.1 Governance and Regulatory Review

An outstanding activity of the Institute in 2005 has been developments on professional governance.

The Institute has been extraordinarily well served by numerous volunteers and by the secretariat. Particular credit must be afforded to Catherine Baldwin who has been actively involved in all the individual components and who has coordinated the entire project.

There are a number of very significant professional governance documents to be completed over the next few months. The release of these standards is a major step – but equally important is for all members to be aware of their existence and to live up to the new professional expectations. The process will not stop there; over the next one to two years there will be a complete overhaul of our Professional Standards and Guidance Notes.

In this section, the various activities are documented. Whilst this material is available elsewhere, I believe that it is useful to summarise the various parts together. The next steps in the process are then outlined.

Particular events and milestones that led to the wholesale revision of our professional governance structure include:

- the collapse of HIH in Australia;
- the failure of Equitable in the UK;
- a series of corporate collapses generally – which whilst not related directly to the actuarial profession, created a heightened consciousness of the importance of good corporate governance;
- the under funding of the Medical Research and Compensation Foundation for the Compensation of people with asbestos related diseases;

- the Penrose Enquiry and the Morris Review in the UK.

A feature of the Institute's response to these events has been, in all cases, a very strong and pro-active stance. In those events that occurred in Australia, not only were the specific problems solved, but more importantly the systemic causes were analysed and procedures put in place to produce lasting solutions that will strengthen the profession going forward. In those events that occurred overseas, the Institute did not adopt the attitude of 'it is someone else's problem' but rather the situations were again thoroughly analysed and where relevant the overseas lessons were used to formulate preventative measures in Australia.

5.2 Code of Professional Conduct

In December 2004, the Institute's Council appointed a taskforce to conduct a comprehensive review of the Institute's Code of Professional Conduct. At the time of writing, a second exposure draft had been issued to members; and following feedback should be finalised by December 2005.

Some of the important issues addressed by the Code of Professional Conduct will be:

- (a) a member's duty in the public interest extends to third parties. This is a practical provision, being a balance between a blinkered position of care for the member's Principal only and some ill defined duty to the public good;
- (b) there are circumstances where the member's duty to third parties may lead to extreme action such as terminating service and/or breaking confidentiality agreements (within the constraints of law);
- (c) actuarial reports must adequately address any uncertainties inherent in the use of assumptions and actuarial methodologies; and

(d) rigorous procedures are required between summaries and reports, and between original and revised reports, and in respect of out-dated reports.

5.3 External Peer Review

In June 2002, the Council of the Institute established a high level taskforce to examine and recommend actions necessary to support the independence and accountability of the actuarial profession. Among the recommendations made by the taskforce was one proposing Independent Peer Review as best practice for significant actuarial work.

The Institute set up its Independent Peer Review Implementation Taskforce to supervise the drafting of a policy statement and a Professional Standard. There has been extensive consultation with the membership and with the Council of the Institute from that date to the current time.

The current position is that, subject to members' approval the Institute will issue a statement (Statement on Internal and External Peer Review) and a Professional Standard (External Peer Review – General Insurance and Life Insurance). If External Peer Review is undertaken by an actuary then adherence to the Professional Standard is mandatory.

The Institute's policy is to encourage internal peer review of actuarial work generally, and External Peer Review of actuarial work where the advice has implications for good corporate governance, eg. where the advice has material implications for employees, customers and/or shareholders of the client.

The Institute's position is that External Peer Review is appropriate for all material statutory actuarial advice in all practice areas. The Institute also encourages the use of External Peer Review for key actuarial advice which is complex, high profile, politically sensitive or contentious, or is advice that impacts many stakeholders.

External Peer Review is soon to be mandated by the regulator for General Insurance for specific statutory actuarial advice; the regulator has also signaled the intention to extend this requirement to Life Insurance.

Where an actuary is involved in the audit of actuarial work, that actuary may also take on the role of External Peer Reviewer. This will assist in keeping overall costs to a reasonable level.

The purpose of External Peer Review is to review and provide a conclusion on the reasonableness of the Primary Actuary's actuarial advice. Additionally, the Reviewing Actuary must consider whether key risks and uncertainties have been adequately identified by the Primary Actuary.

The External Peer Review must recognise that actuarial practice does vary and that the amount, and detail, of work undertaken by the Primary Actuary will vary depending upon the materiality of a particular portfolio.

The responsibility for the Primary Actuary's actuarial advice remains with the Primary Actuary. The External Peer Review does not provide a guarantee of the Primary Actuary's actuarial advice.

The External Peer Reviewer is required to consider the following issues:

- the appropriateness of the scope of the work undertaken;
- the sources and quality of data;
- the valuation methodology adopted;
- whether assumptions are consistent with experience investigations, industry trends and reasonable judgment;
- whether appropriate quality reviews and controls are in place;
- the extent to which the results of the current investigation can be reconciled back to the results of the previous investigation;

- the results should be clearly stated; the key risks sensitivities and uncertainties and their implications should be identified, any limitations should be clearly stated;
- applicable legislation and Professional Standards should be taken into account.

5.4 Disciplinary Scheme

The current Disciplinary Scheme came into existence in December 2001. It remained relatively untested until April 2003 when a number of cases were referred to the Professional Conduct Committee. These cases arose out of the failure of the general insurer HIH.

Our Disciplinary Scheme was thereby stress tested in real time. There is no doubt that the members of the various Disciplinary bodies (the Professional Conduct Committee, Investigation Sub-Committees, the Professional Conduct Tribunal and the Appeal Board) performed their duties assiduously and with distinction. Nevertheless the actual operation of the current Scheme was widely perceived as being deficient in a number of key areas:

- too lengthy - that is, the time taken to reach the conclusion of each hearing was too long;
- not transparent enough - that is, only in very limited circumstances was there sufficient publicity; and
- out of synchronisation with the regulator - that is, there were instances of the regulator acting decisively in respect of members, and the Institute appeared to be less decisive or inactive.

Under the Disciplinary Scheme, the critical test is whether a member has committed 'Actionable Conduct'. The definition of Actionable Conduct covers:

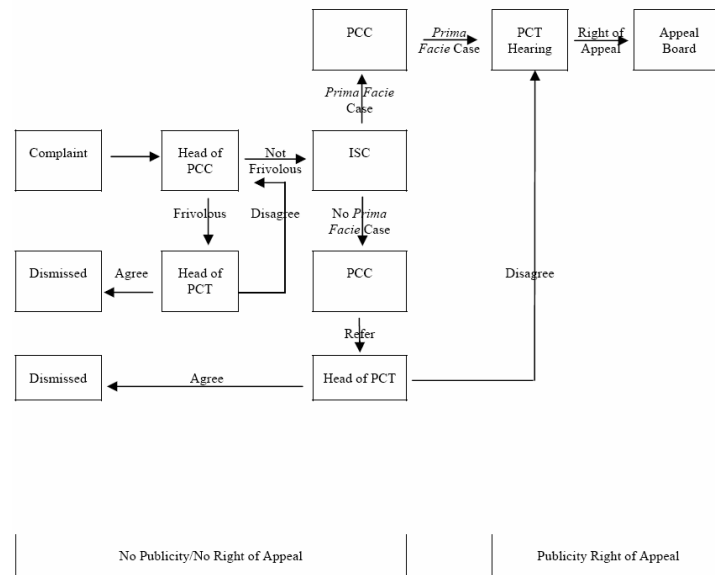
- a) professional misconduct;
- b) unsatisfactory professional conduct; and

c) conduct likely to bring discredit upon the Institute or the profession of actuary.

Areas where the proposed definition of Actionable Conduct varies from the current definition include:

- to be consistent with our new Code of Professional Conduct, there is reference to ‘the provision of professional services’ rather than to ‘actuarial practice’ and to ‘a member’ rather than ‘an actuary’;
- *prima facie* evidence for Actuarial Conduct is being made the subject of an adverse determination by a regulatory body in Australia or elsewhere;
- non-disclosure of any prior convictions, disciplinary determinations etc. will constitute *prima facie* evidence of Actionable Conduct.

The new Disciplinary Scheme Framework is as follows:



where:

PCC is the Professional Conduct Committee;

PCT is the Professional Conduct Tribunal;

ISC is the Investigative Sub-Committee.

The rationale of the framework is to move quickly to the point where there is publicity ie. after establishment that there exists a *prima facie* case. Under the current Scheme there is no publicity until after a final determination.

In addition to streamlining the process through changes to the scheme framework, improved timelines will be achieved with clear process guidelines (expanding on those currently in force). Also, the time within which a Complainant or Respondent is required to do something has been defined. Indicative or desired time periods for the operation of the Scheme have also been specified.

It is believed that the announcement of the existence of a complaint will provide an incentive for the Respondent to cooperate fully and urgently with the investigators. Hence publicity statements are made at both the Tribunal and Appeal stages.

The range of penalties that may be exercised has been increased by the following provisions:

- Direction to undertake specific action including education, retraining or supervised practice.
- The capacity to have more than one penalty imposed on a Respondent (eg. a period of suspension and a retraining order).
- The period over which a member can be suspended has been amended by removing the maximum of two years.

The revised scheme also provides that a Tribunal may require the Respondent, as a condition of any determination, to enter into an enforceable undertaking.

In circumstances where a regulator's determination becomes known at either the Tribunal or Appeal Board stages, there is now provision to stay the process in order for this information to be included and the charge amended.

5.5 Continuing Professional Development

One of the recommendations of the Corporate Governance Taskforce was to review the Institute's Professional Standard on Continuing Professional Development (CPD).

CPD is one of the pillars of a profession. Properly constructed it ensures that members maintain, improve and broaden their professional knowledge and skill, and that members continue to develop their professional standards. Recent events have certainly heightened the community's expectations as to the extent that professions will ensure that members maintain sufficient CPD.

A revised Professional Standard on Continuing Professional Development was recently issued as an exposure draft to members. It is intended that the revised Standard will be implemented in early 2006.

A major short-coming of the current Standard is the non-rigor in recording and verifying CPD. This has been rectified in the exposure draft by the specification of a standard for recording CPD and by new provisions relating to the audit or verification of members' CPD records.

Members will be required to furnish their completed CPD records to the Institute within 14 days of a written request or such other time as agreed by the Institute and the member. It is anticipated that members' records would be verified about every three years.

5.6 Revised Drafting Standards

Considerable comment has been made in respect of the drafting of Professional Standards in the Institute's Corporate Governance Taskforce and the HIH Royal Commission Taskforce and Asbestos Inquiry Taskforce in reports to Council; as well as the Penrose Report of the Equitable Life Enquiry and the Morris Review in the UK.

Accordingly, and on instructions from Council and in consultation with a number of the professional governance taskforces, the secretariat has prepared a Working Draft 'Guide to Drafting Standards.'

The Working Draft is being thoroughly road-tested by the Professional Standards being drafted in respect of the Code of Professional Conduct, External Peer Review, Continuing Professional Development, Financial Condition Reports in General Insurance, and technical reviews of PS 200 and GN 250. The Guide will be re-evaluated early in 2006 as a result of this road testing.

The two key issues for the Institute were:

- Some confusion as to what constitutes a 'Professional Standard', 'Guidance Note' and 'a Mandatory Guidance Note'. A particular feature of the current structure is that 'mandatory' is used where an external organisation has requested that members be issued with instructions as to methods in providing an actuarial certificate. This is surely a unique meaning of the term 'mandatory'!
- Widespread use of imprecise terminology such as 'should' and 'may'. The danger of these words, if used too liberally, is that the extent of the applicability of the standards is too diluted and hence enforcement of the provisions became difficult.

Under the draft Guide, the Institute will issue a Professional Standard or Guidance Note for particular aspects of actuarial practice:

A Professional Standard details mandatory practice requirements and is:

- *usually issued to cover an established field of actuarial work. A Professional Standard is usually issued:*
- *where there is consensus within the profession gained via the Institute's Due Process for the developments of standards;*
- *where actuarial duties, work or practice are provided for by legislation or by official standards or policies of a government agency or regulation; or*
- *where a government agency or regulator has asked the Institute to issue instructions to members as to how certain actuarial duties or work are to be performed.*

Non compliance with a Professional Standard is considered to be Actionable Conduct.

A Guidance Note details competent professional practice and is issued in circumstances where:

- *a trial period is required to establish professional practice before a Professional Standard is produced; or*
- *a statement of professional practice is developed to capture evolving technical practice.*

The current draft guidelines for terminology in Professional Standards and Guidance Notes are:

- *Actuarial practice standards and requirements under a Professional Standard are mandatory and must be denoted by the word 'must'.*
- *To avoid confusion, the words 'should' and 'shall' must not be used in a Professional Standard or Guidance Note.*
- *Professional Standards set out mandatory requirements for actuarial practice. To avoid confusion, guidance to interpretation and implementation must form part of the Professional Standard.*

- *Guidance Notes are non-mandatory, and must only use the word 'may' in relation to actuarial practice.*

5.7 Next Steps

2006 will be a year of redrafting our Professional Standards and Guidance Notes. Note that the 'Actionable Conduct' provisions of the new Code of Professional Conduct and the Disciplinary Scheme only apply to Professional Standards issued under the new Guide to Drafting Standards.

As they become available, all members must read the new Code of Professional Conduct, the statement on Internal and External Peer Review, the Professional Standard on Continuing Professional Development and the Disciplinary Scheme. All actuaries practicing in General Insurance and Life Insurance must read the Professional Standard (External Peer Review – General Insurance and Life Insurance).

Under the Code of Professional Conduct:

Although the Senior Actuary is not personally responsible for the conduct of another Member, he or she must ensure that all Members of his or her Firm are aware of their responsibilities under this Code and that the Firm is aware that Members have such responsibilities.

Senior Actuaries must take their responsibilities seriously. Here are some actions that Senior Actuaries are encouraged to take in respect of members, to:

- Instill a culture of consideration of the public interest whilst serving clients, employers and third parties.
- Make members aware of their potential 'whistle-blowing' responsibilities.
- Ensure that all members are aware of the new requirements under the Code of Professional Conduct in respect of actuarial reports.

- Analyse the work undertaken by his or her firm (beyond that covered by the Professional Standard: External Peer Review – General Insurance and Life Insurance) to determine where it is appropriate to recommend External Peer Review.
- Become familiar with the new Disciplinary Scheme so that he or she is in a position to support other actuaries in the firm.
- Ensure that proper recording systems are in place for CPD and assist in monitoring the activities of members.

I have long considered Senior Actuaries to be an under-utilised resource within the Institute. It would be appropriate to make greater use of Senior Actuaries in communication (both ways) between the Institute's governance structure (Council, the Executive Committee and the Secretariat) and general membership.

6 International Developments

6.1 Perspectives

The actuarial profession is small. Globally, there are less than 40,000 actuaries around the world. In comparison the worldwide membership of other professions is of the order:

Doctors	9.4 million
Accountants	5.5 million
Engineers	6.5 million

(These numbers are approximate – but the order of magnitude is correct.)

There are shortages of actuaries in many developing countries. Moreover there are no short term solutions to educating actuaries in these areas. This is a problem recognised by the World Bank.

The global body representing the actuarial profession is the International Actuarial Association (IAA). Formerly individual actuaries were members of the IAA, but now it is an 'association of

association'; ie. members of the IAA are now actuarial bodies such as the Institute of Actuaries of Australia.

The objectives of the IAA are to:

- develop the role and reputation of the profession;
- promote high standards of professionalism to ensure that the public interest is served;
- advance the body of knowledge of actuarial science;
- further the personal professional development of actuaries;
- promote mutual esteem and respect amongst actuaries;
- provide a discussion forum for actuaries and associations;
- represent the profession with international bodies.

6.2 International Education

The IAA is in the process of accrediting its members in respect of their core education courses (Parts I and II in the Australian context). Member associations cannot be Full members of the IAA without accreditation of their education system. The purpose of the accreditation program is to demonstrate uniform technical competence by member associations, and under-pin Mutual Recognition Agreements. The process will also be helpful for actuarial bodies with existing educational programs to review their systems, and will be invaluable for actuarial associations who wish to introduce new educational systems.

This is a start, but it does not address the issues of the smallness of the actuarial profession and the pockets of scarcity of resources.

Another factor (and this one is favourable) is that the actuarial syllabi of many of the individual associations are converging.

The conjunction of the above features suggests the following way forward:

- A common global actuarial syllabus covering the core technical aspects of actuarial education, core application and professionalism. In the Australian context this would be Part 1, Part II and the Professionalism Course, and ideally Course 1 (Investments);
- Specialist subjects taught locally or regionally, to incorporate deep knowledge of a specific practice in a particular country;
- Emphasis on university and on-line education;
- Regional centres of excellence.

The Institute needs to consider whether there is an opportunity here for Australia to extend our education reach further into Asia Pacific.

6.3 Other Global Aspirations

Past Presidents and the CEO of our Institute have been vocal advocates of other global initiatives that could see the actuarial profession at the forefront of globalisation, and at the same time pool scarce resources:

- Undertake a global assessment of the main risks attaching to the actuarial profession (such as superannuation fund deficits).
- Greater global co-ordination of research (the virtual Global Actuarial Library on the IAA website is a good start. I searched on the topic 'Longevity' and obtained 1,228 references).
- Align corporate governance, professionalism standards and CPD activities to the extent that they are not dependent on local conditions. International Accounting Standards provide a major opportunity in this are.
- Create more opportunities for interaction between members of the global actuarial community.

There are, of course, prices to pay for moving in this direction. Resources of the IAA would need to be considerably enhanced, which in turn means greater financial contributions from members. At the moment the financial burden is not overly significant: individual members' fees increased recently from C\$10.00 to C\$12.50 per annum.

Also, local actuarial bodies would need to be prepared to devolve some of their processes to the IAA.

6.4 Asia and New Zealand

Our relationship with Asia and New Zealand is like pieces of a jigsaw puzzle lying haphazardly on the ground:

- 12% of our Fellows work in Asia and New Zealand.
- Given the size of the professional associations in Australia and New Zealand, the magnitude of the challenges facing all professions in the modern world, the pace of change, our common cultural, political and legislative heritages, and the number of corporations operating in both countries, there is an imperative for the New Zealand and Australian actuarial professions to work more closely together. In the organisation that I work for, we discovered that closer working relationships between Australia and New Zealand translated into tangible and significant commercial benefit.
- We provide our Part III Education Program in Asia – but the pass rates are appallingly low. More generally can we compete with the larger actuarial bodies of the USA and the UK?
- We subsidise our Part III Asian education courses– can this be justified?
- Our expertise in General Insurance is particularly admired in Asia. How can we leverage this expertise?
- We have provided successful seminars in China – but the dominant external education provider is the Society of Actuaries (US). What is our goal with respect to China?

On the one hand, Australia is rich in resources that could assist many of our regional neighbours; and in many instances Australia has a geographical and cultural affinity with countries in our region. On the other hand our resources are limited and are quite stretched at the current time. A review of our relationship with our near neighbours is necessary and important.

7 Financial Modelling

7.1 Financial Modelling

Financial modelling is a core component of the work that actuaries do. It is my observation that many of the major consulting firms were initially built around ground breaking financial models; and day to day work carried out by actuaries is often dominated by financial modelling work.

Actuaries bring enormous strengths to financial modelling:

- Our educational course virtually guarantees that actuaries have logical and analytical minds and hence are well placed to construct the models in the first place.
- Experienced actuaries are able to synthesise what are the important components to model and what may safely be treated with a 'broadbrush'.
- Actuaries can bring judgment to bear on whether the answers being produced by the models 'make sense'. Actuaries can interact with the models so that the actuary's own understanding and insight can be deepened.
- Actuaries are well trained to ask the models the right 'what if' questions and hence ensure that the models correctly encapsulate the uncertainties of the real world.

However, there is scope for improvement.

There are widely accepted principles for building models. These include keeping data, inputs, calculations and outputs separate, testing for accuracy and sensitivity, documentation, presentation of results etc. These are also the skills required to use specific software such as Excel or SPSS.

Actuarial expertise in financial modelling could be enhanced by any or all of the following:

- a greater emphasis on financial modelling in our pre qualification education – particularly at the university level;
- formation of special interest groups in respect of financial modelling – at the workplace or through the Institute;
- specific financial modelling opportunities in respect of Continuing Professional Development.

One area of financial modelling where actuaries have been successful in recent years has been project financing. Actuaries are involved in the development and review of the complex models underlying the evaluation of project financing opportunities.

The importance of the financial model to project financing cannot be overstated. It is the primary tool for evaluating and assessing the benefit of project financing and is continually used during negotiations to quantify the impact on the project's cash flows of changes to the underlying contractual arrangements. Potential lenders to project financing will use the financial model as a necessary tool to complete their credit risk analysis; running various scenarios through and noting the impact on key financial ratios.

Globally, project finance decisions determined the investment of around 10,000 billion US dollars in 2004.

8 The Practices

8.1 Actuarial Practice

Members of our Institute relate to their specific practice more than to the profession as a whole. This is natural because their particular practice is relevant to their eight, nine or ten hour working day.

Moreover the practices ensure the commercial relevance of our profession. Whilst clients and employers undoubtedly value the core technicalities of our profession, our expertise in these areas is useless unless we are well versed in knowledge of our client's or employer's industry.

8.2 Life Insurance

Over virtually my entire working lifetime, actuaries in Life Insurance have sounded like farmers confronting the vagaries of weather: 'we'll all be rooned!'. In the case of Life Insurance, the two supposed scourges of the industry are the decline in the number of life offices and the general trend to product simplification.

It is a tribute to our practitioners in Life Insurance that they have managed to adapt to the changing environment and have continued to thrive.

Areas of current focus for Life Insurance actuaries include:

- proposals in respect of the Resilience Reserves used in the determination of statutory solvency and capital adequacy requirements for Life Insurance companies in Australia;
- implementation of International Financial Reporting Standards (IFRS);
- implementation of the new External Peer Review Professional Standard from 1 January 2006;
- valuation of Life Insurance and Wealth Management entities;

- effect of the newly established Choice of Fund regime on insurance products;
- the tax differential in certain circumstances between Life Insurance companies and other Wealth Management corporations;
- product design issues surrounding longevity risk; and
- the need to obtain up-to-date experience analyses on death and disability experience.

In theory actuaries in Life Insurance companies should be well placed to be involved as Risk Managers in Life Insurance companies in the broadest sense – not just in respect of liabilities. In particular, operational risk management is attracting the attention of some of our leading life practitioners.

In practice it appears that there is some ‘push back’ from life office management to a greater involvement by actuaries in Risk Management. This is partly due to the view that managing the risk/return trade off in the organisation is the prerogative of managers rather than actuaries; and partly because Risk Management is perceived as multi-disciplinary (which it is) rather than the preserve of one profession.

As a profession we need to heed these messages, as we seek to expand generally into the Risk domain.

However there is one aspect of Risk that must always be paramount for our life actuaries – with our training and insights we are particularly well placed to communicate the risks of alternative courses of action. The role of risk communication is particularly important.

8.3 General Insurance

Over my working lifetime, actuaries have evolved from a few individuals doing the odd General Insurance job as an adjunct to their main activities to General Insurance becoming the second largest practice within the Institute and where actuaries are a core component of the regulatory and operational environment of General Insurance companies.

Necessarily, Financial Condition Reports (FCRs) will be a major area of activity for General Insurance actuaries. The scope of the FCR is very broad (as set out in section 4.1.1 of draft Professional Standard 305):

- business overview;
- recent experience;
- Insurance Liability Valuation;
- adequacy of past estimates for insurance liabilities;
- asset and liability management;
- profitability, including premium adequacy;
- capital management and capital adequacy;
- reinsurance arrangements; and
- risk management.

The genesis of FCRs was a recommendation made by Justice Owen arising out of the HIH Royal Commission. Hence FCRs have compliance and regulatory demands. However the real challenge for actuaries is to ensure that the document is a 'value add' for General Insurers. The case for adding value is eloquently set out in the synopsis of a paper by David Finnis, Stewart McCarthy and Vicki Younis, 'Financial Condition Reporting for General Insurers – A Case Study' presented at the recent General Insurance Seminar:

...we demonstrate that an FCR can deliver value in two main ways:

Firstly, by providing a forum for existing reporting processes to 'talk to each other' and hence gain the benefits from a coordinated view of the financial condition of the organisation; and

Secondly, by providing the impetus for a process of continual improvement to become part of the culture of the organisation. This process, encapsulated in the concepts of (a) provide the available and relevant information; (b) identify the issues by this information and (c) monitor and, where necessary, prompt actions implied by recognition of the issues.

The FCR that emerges from this reporting structure is a living, working document that becomes part of the ongoing financial management of the organisation. It is focused on business issues rather than the constituent insurance entities within the organisation. It attempts to define the value, not only as represented by the organisation's current balance sheet, but also inherent in future balance sheets, by examining operational influences on financial outcomes over the short to medium term

It also provides a capital planning tool by examining current and future expected solvency levels, with particular focus on comparison with statutory Minimum Capital Requirement (MCR).

Financial Condition Reports are a major opportunity for the profession, and successful implementation is a key imperative over the next few years.

Other major areas of activity for General Insurance actuaries include:

- implications of APRA Stage 2 (beyond FCRs);
- implementation of External Peer Review;
- implementation of IFRS;
- managing the extreme ends of the distribution, including terrorism and natural catastrophes;

- risk margins; and
- managing the insurance cycle.

8.4 Superannuation

As is well documented the traditional domains of actuaries – stand alone defined benefit funds – are rapidly declining. In international surveys, Australia is categorised as a ‘defined contribution’ country.

Through the influence of many individual actuaries, and through the work of the Institute, actuaries have a well respected and (still) well known brand name in the Superannuation industry.

The challenge is to leverage that brand name into the new environment, which is traditionally not associated with actuaries.

Current areas of actuarial involvement include:

- assisting companies to account for their liabilities under the new AASB 119 accounting standards;
- complying with new APRA standards in respect of self insurance;
- assisting companies and funds in the ongoing implementation of Choice of Fund and new portability regulations;
- assessing the effects of different models of implementation of the Commonwealth Government’s new ‘transition to retirement’ legislation;
- continuing to work in the fast growing SMSF environment, although recent changes to legislation eliminating new defined benefit pension plans will pose a challenge.

At the Institute level, we are seeking to increase the level of accuracy and professionalism of benefit projections in the community, which are typically provided through on-line calculators. The Institute has written to ASIC, suggesting methods of achieving

standard default assumptions for calculations and offering to facilitate industry-wide adoption of a suitable standard.

The decline in the number of enrolments in the Superannuation Part III course is a matter of concern, and the Institute has a watching brief on the situation.

One 'solution' that should be explored is to investigate the possibility of combining some of the units of the Life Insurance and Superannuation courses. There is a definite convergence of these two practices which could be reflected in our education system, thereby conserving scarce resources.

Areas of opportunity for actuaries include:

- financial planning - the Institute is exploring a particular accreditation model; and
- advice to defined contribution funds in the areas of benefit projections, analysis of fees and charges, self insurance, reserves, unit pricing, product design, asset/liability matching, equitable management of capital and risk management. In providing Superannuation advice actuaries need to be aware that the entity that they are advising is transitioning from a small sideshow of a corporate sponsor to a large complex financial institution.

Superannuation – or the provision of adequate income support in old age – is a fertile area for actuarial involvement in public policy.

The Institute formed three taskforces to consider aspects of Retirement Income Policy – adequacy of benefits, the effects of our tax and Social Security system on ensuring desirable outcomes in respect of retirement incomes and the inter-generational effects of an ageing workforce.

The three taskforces have recently been combined into one, with the objective of producing a paper early in the New Year. At the same time another taskforce has been set up with a longer term focus, to provide an analysis of trends in longevity.

To my mind actuaries play a surprisingly small role in Social Security. I am not aware of the Department of Social Security consulting actuaries to any significant degree; a word search on the electronic version of the World Bank's recent book: 'Old Age Income Support in the 21st Century' does not record one entry under 'actuary' or 'actuaries'. Surely our profession can become more involved?

Similarly the actuarial profession is well placed to contribute meaningfully to the public debate on how to alleviate some of the adverse economic implications arising from Australia's ageing population.

One of the special interest groups in the IAA is the 'Pensions Benefits and Social Security' section. Like all such sections it exists to organise seminars and to provide a platform for papers and notes on matters of interest to practitioners in the area.

I encourage all Superannuation actuaries to consider joining the PBSS.

8.5 Banking & Finance

The membership numbers in table 3.3 show that the number of actuaries who describe themselves as working in Banking and Finance has grown from 3 in 1992 to 63 in 2005. Moreover there are some extraordinary success stories for actuaries within the sector: the Treasury Division of one major bank is effectively an actuarial department; and all pricing within another major bank must be signed off by an actuary.

However, the actuarial profession is not yet recognised per se in Banking and Finance in the same way that it is recognised in Life Insurance, General Insurance, Superannuation and Health Insurance. Moreover there is not the peer support for actuarial students and actuaries within Banks and general financial institutions that exists in the more traditional practices. Also, many actuaries and former actuarial students working in the area often

regard the actuarial qualification as at best an irrelevance and at worst a hindrance to their careers.

To address these and other issues, a Banking, Finance and Investment Taskforce was set up. Some of the taskforce's longer term recommendations have been commented on elsewhere in this Address. In the short term, the taskforce has recommended:

- The formation of a Banking & Finance Practice Committee. In its August 2005 meeting, Council accepted this recommendation.
- From the Institute's perspective, Risk Management should be the central focus of actuarial involvement. The taskforce notes:

...the actuarial profession in Australia has an exceptional opportunity to be the leader in the field of Risk Management for the whole finance industry (and maybe beyond), while recognizing other disciplines already make valuable contributions in the field. There is an urgent need for these skills and a dearth of appropriately trained and experienced professionals. Actuarial skills, in their most generic sense, are the closest obvious fit available. If the profession were able to adapt itself fast enough, we could quickly establish a commanding position.

Particular areas where the taskforce perceives opportunities for actuaries in the short term include:

- 1) Enterprise wide risk analysis in financial institutions, including Basel 2 implementation.
- 2) Capital management and allocation in financial institutions.
- 3) Credit risk analysis and credit derivatives.
- 4) Derivatives structuring and sales (sell side) and buy side analysis and execution.
- 5) Structured finance (eg. hybrids and securitization).

It is envisaged that if actuaries successfully enter Banking and Finance in these areas, then individual actuaries will take leadership roles and further enhance the development of our profession.

8.6 Health

For the Institute at the current time, Health presents a classic Catch 22 – there are enormous opportunities for actuaries to become involved, but our existing resources are relatively small, and are seriously over-stretched.

We have eighteen actuaries who state that they predominantly work in Health. And yet we have statutory roles around the Appointed Actuary position in Health Insurance companies, and responsibility for producing Financial Condition Reports. The premium income of Private Health Insurance funds is almost \$10 billion per annum – nearly half of the premium income of the entire General Insurance market.

The most urgent priority for the Institute is in the provision of formal education (see section 4.13), and hence to increase both the quality of service and the supply of actuaries in the Health area.

Within the Private Health Insurance industry, there are major questions which would benefit from actuarial analysis, including:

- Are there sources of capital available other than price increases? What level of capital does the industry need?
- Is the risk pool becoming irretrievably segmented? What will this mean for consumers and the private health sector generally? And what needs to be done about the risk equalisation scheme?
- How can these institutions position themselves to fund the increasingly wide range of consumer choices offered by the health industry?
- What new financial products will be required to fund Australian's consumption of health services in future?

- Should there be more or less players? Should the industry remain mainly mutual?

Moving beyond Health Insurance into Health Financing generally, the potential opportunities continue to mount:

- Health expenditure is already a major item of Commonwealth costs, and is projected to significantly increase in real terms due to the twin effects of the aging population and increases in technology, compounded by higher community expectations of what it means to be healthy.
- Due in part to the shared responsibilities of State and Federal governments, there are major inefficiencies in the system.
- There is a need to 'incentivise' people to ration their expenditure on health rather than to regard free health provision as a right.
- At some stage a serious ethical debate must take place: at what point is the level of resources and expenditure too great to keep people who are severely incapacitated and/or terminally ill alive.

If the resources were available, then Health would be a fertile ground for actuarial research. Two topics that are particularly worthy of consideration are:

- Health expenditure has consistently been rising more rapidly than increases in the Consumer Price Index. What is driving the rapid rise in costs? Can this growth be contained? What financial options are available to meet the growing cost of healthcare?
- To what extent can Health expenditure be affected by preventative measures? What is an effective framework for measuring the cost benefit of preventative programs?

8.7 Other

During the recent NRL finals series, a TV commentator incurred the wrath of the North Queensland Cowboys' fans by referring to each of the other finalists by their respective names, and then referred to North Queensland as 'the other mob'.

In the same way I am likely to upset those members who work in practices that I refer to as 'Other'. However no disrespect is intended: the 'other practices' do not sit in the same formal structure of the practices already considered.

Risk

The Institute's Risk Management Group is being reconstituted as a Practice Committee. This Committee is charged with developing risk as a separate discipline of actuarial science, and also to ensure consistent treatment of risk through our other practices – particularly in relation to asset/liability issues.

The reasons for the formation of our Risk Management Group are well known. The commercial sector has become very risk aware in recent years, and hence a 'market' exists. Moreover one of the trends in Risk Management is towards quantitative techniques, and this clearly plays into the core competencies of actuaries. There is also a defensive element of our venture into Risk as a separate practice – we need to be wary of other professional organisations moving into our territory.

There are some challenges to the actuarial profession in respect of Risk Management.

The first challenge is to place more emphasis on the 'management' part of Risk Management.

Through our training actuaries excel in the quantification of risk. However, management is much more than this - it extends to awareness of the risks in the first place, an ability to assess the significance of the risk in the business context and the effective communication of that risk and its consequences to the appropriate decision makers.

A good example is Sir Derek Morris' review of the actuarial profession in the UK. He concluded that whilst actuaries understood the risk of pension funding, in the main these risks had not been communicated to the actuaries' clients.

The second challenge is to recognise the breadth of Risk Management. It is a truism that the main objective of investment management is to 'maximise investment return subject to an acceptable level of Risk.' Similarly one could state that the financial objective of a commercial entity is to 'maximise profit subject to an acceptable level of Risk.'

Expressed this way, it is apparent that Risk permeates everything – it is a core business of every entity. We cannot expect a senior manager of a large entity to consult an actuary on 'Risk' – that is the manager's job.

What the actuarial profession can - and should – do is carve out particular niches in which to operate. Inevitably these will be areas where quantification can be applied and fortunately for actuaries these areas are ever expanding and are growing in importance – what gets measured gets managed. I would also expect actuarial input at high levels rather than detail; and actuaries should be in a good position to inject commercial reality into risk assessment.

Another implication of the breadth of Risk is the need to partner. Risk lends itself to a multi-disciplinary approach and actuaries must welcome the opportunity to work with other practitioners in this domain.

Investments

There are 118 Fellows of our Institute who maintain that their primary field of practice is Investments. This is a substantial number, representing about ten percent of the total number of Fellows.

Another indication of the ‘strength’ of investments within the actuarial profession is that it is a compulsory topic in our new Part III syllabus.

However many actuarial practitioners in Investments see very little value in the actuarial brand. Employers in investment management rarely actively seek the actuarial qualifications – the CFA is the designation of choice (even though my sources, who admittedly are actuaries, inform me that the actuarial education is more rigorous and demanding than the CFA). The main actuarial niche within Investments is institutional asset consulting – but this is declining in line with the reduction in the number of non SMSF Superannuation funds.

The recommendation of Banking Finance & Investments Taskforce, accepted recently by Council, was to not set up a separate Investment Practice Committee. Instead it is the responsibility of other Practice Committees to incorporate Investments into their activities: Banking & Finance is to cover the ‘sell side’ of Investments – product manufacturing etc; Risk is to incorporate asset-liability management issues; Life Insurance & Wealth Management is to cover investment research and product design for retail investors; and Superannuation & Employee Benefits is to continue to be involved in institutional asset consulting.

I encourage the respective Practice Committees to take this issue seriously: the problem with ‘everyone is responsible for Investments’ is that ‘no-one is responsible for Investments.’ The Institute should keep a close watch on developments in this area. If any member wishes to be actively involved in a leadership role for the Institute in respect of Investments then please contact me.

Energy and Environment

The issues that the Energy and Environment Committee and individual actuaries in this area become involved in are staggering in range and are of the utmost importance: climate change, renewable energy sources, energy trading, carbon trading, species extinction,

natural disasters, urban zoning and energy pricing are some of the issues coming under the attention of actuaries.

Actuaries are extremely well placed to contribute to these issues – our tool kit of (financial) modelling, risk management and the actuarial control cycle are ideal analytics.

The subject is vast and whilst individual actuaries will, and should, practice in areas as the opportunity arises, at the Institute level we are likely to focus our activities on a relatively small number of key areas. The reason that I suggest focus is because, generally, stakeholders seek deep expertise; particularly clients looking to hire a consultant, or an employer hiring senior staff. A good example of focus is the actuarial involvement in climate change where there is increasing public awareness of the roles that actuaries can play, and where our involvement can be traced back to at least December 2000 in Tony Coleman's Presidential Address.

9 Corporate Governance

9.1 Governance of the Institute

At Andrew Gale's initiative, Council participated in two sessions on Corporate Governance, facilitated by Lynn Ralph (Cameron Ralph Pty Ltd). The sessions provided great insight, and are likely to lead to considerable improvements in the conduct of Council meetings, and to the interaction between Council, the Executive Committee, the Secretariat and Committees.

One pertinent observation arising from the process was that the turnover of the presidency was high – and we should consider the possibility of the presidential term being two years rather than one.

The current arrangement is that Council elects the Vice President; who then serves one year in that role, then one year as Senior Vice President, then one year as President.

In his 2002 Presidential Address, Chris Lewis set out the advantages of our current system. He pointed out that by the time a president takes office, he/she is fully up to speed on issues and processes, and also has the capacity to draw on the advice, assistance and counsel of three others (ie. the Vice President, Senior Vice President and Chief Executive Officer).

I agree with Chris's observations but there are counter arguments. Over recent years the span of actuarial science and practice in Australia has grown enormously in breadth, depth and complexity. It is increasingly difficult for the President to cover all aspects of the task in one year.

Each president comes to the office with his or her particular background and his or her particular set of objectives for the future. One year presidencies can be disruptive for the profession as one particular year's primary focus may be relegated to secondary importance in the next year. Also, rapid turnover in presidents creates additional strains for the secretariat.

The major challenge in moving to two year presidential terms would be to find candidates willing to take on the role – because of the time commitments involved. Past Presidents estimate that the time commitment is 40 to 50% of 'normal' working time.

Clearly any change in the term of the presidency would cause other aspects to be investigated, such as the Vice President/Senior Vice President/President progression, and the duties of the President.

We live in a world of increased accountability and transparency. Would it make sense for one member of Council to be a non-actuary? As well as assisting good corporate governance, such a person would bring a different perspective to Council deliberations.

10 The Evolving Actuary

10.1 A More Consummate Communicator

Actuaries have a bad reputation as communicators, although my personal experience is that there are some extraordinarily competent communicators amongst our membership.

Sir Derek Morris clearly perceived the communication issue to be of the utmost importance. One of his recommendations was that measures should be put in place so that users of actuarial advice were in a position to challenge and question actuarial advice. Moreover he recommended that the (UK) Actuarial Standards Board should develop a generic standard on communication covering the content of actuarial communications and the use of those communications by others. He further recommended that the substance of the new standard should, where applicable, be reflected in all professional standards going forward.

The ‘actuary as communicator’ is particularly appropriate at the current time:

- it will simply not be possible to move into wider fields without effective communication;
- recent publicity about actuaries has been negative. Strong communication about the positive side of actuarial work is a necessary counter balance.

In a thoughtful paper to the Cairns Convention this year ‘The Eighth Habit of Highly Effective Actuaries’, Andrew Brown sets out a possible way forward for our Institute:

- *Establish a communications committee to carry out research, set objectives around acceptable communication standards for the profession and implement initiatives to achieve these objectives. This committee would also monitor developments in the UK and US in relation to actuaries and communication.*

- *Greater focus on education and CPD requirements for business communication. Communicate with employers in potential new fields on how the institute is supporting the development of greater capability in this area.*

10.2 A More Global Outlook

The great majority of actuarial work is carried out for local entities operating within a local legislative, commercial and cultural environment. I doubt that this will greatly change in the foreseeable future.

However there are trends that suggest that global considerations will become increasingly important: international accounting and actuarial standards; an emerging global regulatory model; converging actuarial education syllabi around the world; emerging shortages of actuarial expertise in our region, and; the need for a small profession to conserve scarce resources.

The phrase ‘think globally, act locally’ will be increasingly relevant to actuaries.

10.3 A Greater Emphasis on Skills Rather Than Practice Knowledge

If the profession is to move in the direction of attaining its vision of being the trusted adviser in respect of financial matters generally, then our emphasis must move towards the generic skill sets of actuaries rather than practice specific knowledge. As previously stated this does not mean abandoning the practice knowledge – which is a necessary pre-condition for employment. Skills are a pre-condition for professional performance whereas knowledge needs to be kept up to date during a person’s career.

10.4 A More Explicit and Transparent Professional Governance Framework

In the main, actuaries have conducted themselves to the highest professional and ethical standards. However the modern world demands a high level of accountability and transparency. The outworkings of this demand requires prescriptive and more widespread standards, and a willingness to accept greater external scrutiny.

10.5 A Significant Presence in Risk Management

The level of uncertainty in the world appears to be growing. There is increased concentration of capital, increased mobility of capital and greater use of financial derivatives. Even natural events are possessing greater risks, with catastrophes increasing in severity in recent years.

Actuaries have the abilities and the skills to analyse the risks and provide value added advice in this environment. Do we have the will?

10.6 More Involvement in Partnering

If we are to attain the vision and work in wider fields, if we are to work in Risk Management beyond our traditional boundaries then we must be able to work harmoniously with other professionals since projects that we work on will demand multi-disciplinary skills. We should also be aware of the value of partnering with others in our traditional areas: to think that we can do everything is dangerous hubris.

Acknowledgements

Source material includes:

1. Morris Review of the Actuarial Profession : Final Report
2. Chris Lewis: 'Shaping the Future : In a World of Uncertainty', 2003 Presidential Address
3. Part III Review Team : 'Proposed Strategy for Future Part III Education', August 2002
4. Professor Anthony Baker : 'Final Report Review of Part III Actuarial Education', August 2005
5. Banking Finance and Investments Taskforce : 'Draft Positioning Strategy 2005-8', May 2005
6. Nick Crawley : 'Model Behaviour', February 2005
7. David Finnis, Stewart McCarthy and Vicki Younis : 'Financial Condition Reporting for General Insurers – A Case Study', October 2005
8. Andrew Brown: 'The Eighth Habit of Highly Effective Actuaries', May 2005.
9. Tony Coleman: 'Beyond Uncertainty – Turning Risk into Value', 2001 Presidential Address.

Peer review of an earlier draft was carried out by Catherine Baldwin and Fred Rowley; peer review of sections was done by Tim Andrews, Mike Barker, Elayne Grace, Stuart Rodger and Steve Schubert.

Errors and opinion are my own responsibility.

Discussion 2006 Presidential Address The Evolution of the Profession

Melbourne

Chris White BTh, MA, FIA, ASIA, FIAA

In 1.1 of his address, Martin states that change for the profession can be *revolutionary*, caused by external event shocks or visionary thought leaders, or *evolutionary*, by which I think he means less dramatic change which unfolds through progressive, small increments, or perhaps more in keeping with the popular scientific concept of evolutionary change, through trial and error. The examples of evolutionary change on which Martin focuses in his address are: maintaining our leadership in traditional fields, expanding into new ones, raising the level of our professional standards, increasing our accountability and transparency, and deepening our commitment to serve.

Since returning to Australia four years ago, I have been involved in several aspects of the Institute's processes of change, particularly closely with those covered by Martin in 5.1 and 5.3. However having an interest in all the matters covered in Section 5, particularly flowing out of the work of the Corporate Governance Taskforce, and indeed on the whole spread of issues covered throughout his address, I want to reflect on some of the changes over that period with Martin's revolutionary/evolutionary paradigm in mind.

The first point I want to make is that revolutionary change is an essential factor in evolutionary change, and vice versa. Just as evolutionary change in species appears to be speeded up or slowed down by environmental shocks, so the rate of progressive change in our professional environment and practice is influenced by external events. For example, would we have had the same impetus to further strengthen our professional standards, code of conduct, disciplinary processes, etc if HIH had not folded?

I would also conversely argue that the rate of progressive change in our professional environment and practice can also influence external events. To what extent did the actuaries involved in HIH get into the situations they did because our professional standards, code of conduct, CPD, etc, and the 'light touch' regulatory environment, were inadequate, and had we then had the new professional standards, code of conduct, peer review, and regulatory regime, how much less damaging would the HIH debacle have been, at least for the professionals involved, and the profession as a whole?

Secondly, from my close observation over the last four years, an outstanding aspect of the profession's leadership as a group – Executive and Council in particular - has been their willingness to confront difficult issues. Of course enlightened leadership is about sensing the progressive mood of the constituency, articulating an appropriate vision, persuading waverers, and in the end taking enough with you, while recognising that you can't please everyone. Perhaps the reminder of the recent failures has steeled enough nerves to help us as a profession to introduce a new code of conduct, disciplinary scheme, external peer review for statutory insurance valuations, and upgraded CPD, while continuing to upgrade our pre-qualification education processes. And primarily from what I know of Martin over a long period, corroborated by what he says in his address, I have every expectation he will continue to play an important ongoing part in that process of both initiating and responding to evolutionary and revolutionary change.

Turning now to one of my specific areas of interest, the road to the introduction of external peer review has been a long and, I have to say, tiring one. Since the Corporate Governance Taskforce was set up in mid 2002, it has been a lively subject at two biennial conventions and has been through many twists and turns and I don't know how many presentations to members, committees and to Council. And it's not all over yet. We have a Notice to Members on the subject, and a professional standard covering statutory insurance valuations. We have still to return to the subject of superannuation, which we decided to put on the back burner earlier this year. And we need to consider whether more needs to be done in other smaller or emerging practice areas, notably health, or whether shortage of suitable resources makes that impractical at this stage. The experience with EPR in the insurance practice areas will be helpful in assessing whether, and if so in what form, EPR would be appropriate in these further practice areas.

Peer Review has been the recommendation of the Corporate Governance Taskforce which has gained significant attention, but it was only one of fourteen, virtually all of which were adopted by Council, and I thought as my third point I would take us back to the purpose of that taskforce, and remind us of those other recommendations. Considerable progress has been made on some of them, while others wait to be addressed.

Essentially the taskforce was set up in the aftermath of the HIH collapse to make recommendations on improving the independence and accountability of the actuarial profession, and on the Institute's role in that objective. Thus the terms of reference were broad and the taskforce took a broad view of them, but nevertheless with an eye to producing practical recommendations.

The taskforce recommended inclusion of modules on corporate governance and ethics in both the pre- and post-qualification education offerings.

This recommendation has been implemented for pre-qualification – in Subject 4 of Part III, and in the professionalism course – but it has not been implemented for CPD, other than one Horizons session I ran on an introduction to methods of ethical reasoning a couple of years ago. I think we need to lift the profile of ethics and professionalism amongst actuaries generally, and this is not a difficult recommendation to implement.

As recommended, a new structure and drafting code for professional standards and guidance notes is now in place, and existing standards and GNs are about to be reviewed in line with it. This will be a substantial task.

As members will be aware, we are about to adopt a new code of conduct and disciplinary scheme, which in the light of recent experience with them should be much more functional. Also, the CPD scheme has been reviewed. The question of practice certificates for statutory actuaries, suggested by the Corporate Governance Taskforce, needs to be kept in mind.

We must remain pro-active in the on-going review of standards, guidance notes, the code of conduct, disciplinary scheme, and CPD arrangements. This probably needs more paid professional resources to ensure it happens.

Some of the recommendations where some progress has been made or we are yet to get going are:

- Whistle blowing – where the taskforce recommended publication by the Institute of a guidance note, that the Institute press for consistent treatment of all whistleblowers by both APRA and ASIC, and development by regulators of ‘best practice’ whistle blowing protocols for adoption by financial institutions;
- The Institute to press for APRA to hold confidential regular one-to-one meetings with nominated office bearers in financial institutions;

- Mentoring of Part III students, where progress has been made;
- Establishment of advisory panels and legal advisory recommendations to help actuaries in difficult situations, which I suspect is in the 'too hard' basket;
- Standard wording of employment contracts for statutory actuaries;
- Communication with audit committees on the role of the actuary and the sort of questions he/she might be asked.

I will be interested to see how many of these remaining issues the Institute's leadership feels able to pick up, and how many remain on the shelf as 'too difficult'. The important point, I think, with our response to these issues, which really comes down to questions of professionalism and ethics versus commercialism, is how well we handle the inevitable pressures of the next boom, when the lessons of HIH, Enron, etc (for those who remember them) have faded from the scene. This is the time in the 'cycle' when the pressures of change, whether evolutionary or revolutionary, can easily take us in the wrong direction.

Richard Cumpston MEngSci, MAdmin, FIA, FIAA

Martin Stevenson has asked me to speak on behalf of the 'other mob'. I think he means those not working on life, general, super, banking, finance, health and investment.

New growth will largely come from individual actuaries or small groups recognizing opportunities, and putting a lot of time and money into them. These will be high-risk ventures, and more may fail than succeed. The actuarial skill set is limited, and largely shared with other professions. Investment is needed to establish technological superiority, and to rapidly capture any emerging markets. The Institute can sometimes help, as it did in 2003, when it put a forward-looking greenhouse policy to the Commonwealth, with good technical backup. Unfortunately the institute has not

followed up this initiative, and may not have enough members in the area to support continuing work.

We have a draft standard 'External peer review – general insurance and life insurance', proposed for 1st January 2006. I've used this draft to do 2 peer reviews for general insurers, and found it a helpful and sensible document. It is bizarre, however, that the peer reviewer rotation can occur within a partnership or firm of actuaries.

Peer review may be costly and time consuming if the primary actuarial reports are poorly documented. Professional Standard 300 should be strengthened to try to avoid this problem for general insurance reports. For example, section 19 requires the actuary to be 'familiar with the relevant aspects of the administration and accounting of the insurer's liabilities'. The standard should require these aspects, where relevant to the estimated liabilities, to be documented in the actuarial report.

Section 22 reads 'The actuary should where possible take reasonable steps to verify the overall consistency of valuation data with the insurer's financial records.' If the actuary is unable to do so, it should be done by the insurers' auditor.

Section 56 reads in part 'Normally, the report should contain sufficient detail regarding data and methodology that an informed reader should be capable of checking the reasonableness of any results contained included in it.' We should drop 'normally' and 'reasonableness of any' so that it reads, '*the report should contain sufficient detail regarding data and methodology that an informed reader should be capable of checking the results included in it*'.

External peer review is already causing significant improvements in the quality of the general insurance actuarial advice, and I expect these improvements to continue.

I'd like to see our institute contributing more to public debate. For example, last week the general purpose standing committee number one of the NSW Legislative Council released a 247 page

report titled, 'Personal injury compensation legislation'. One chapter quoted actuarial reports written for the Law Council of Australia, the NSW Law Society and the Insurance Council of Australia, and concluded 'there is scope for a re-assessment of the motor accident and public liability reforms made in NSW since 1999, based on the long-term profitability of the CTP and public liability insurance lines'. That was a sensible conclusion, and all the actuarial reports were more or less in agreement. But much of the report was about the desirability of similar benefits for similar injuries, the need to revert from the 5% discount rate back to the High Court's 3%, and the desirability of no-fault coverage. No actuarial views on these issues were quoted.

Graham Rogers FIA, FIAA

Firstly let me start with two sets of congratulations, firstly to Andrew on an extraordinarily successful year. I know the challenges that you faced and I think you've handled them with extraordinary aplomb and capabilities, so congratulations Andrew and thank you.

To Martin, congratulations on the Presidency, congratulations on your Presidential Address and welcome to the seat, you will enjoy it. It is a position which gives an extraordinary amount back to the incumbent as you hope that the incumbent gives to the Profession and I'm sure that Martin will.

I'm just going to support a few issues, which Martin raises. I don't think there is anything in your address that I'd want to challenge. But firstly let me take up the international issue. The issue of globalisation of the actuarial profession will continue to roll over us over the next few years. Many of the issues, which actuaries are facing around the world, are similar, accounting standards, professional standards, the regulatory convergence, the protection of the brand. They are not only common; they come from the same sources.

Accounting Standards obviously come from the International Accounting Standards board; the protection of the brand comes as we can see from avoiding failures such as HIH here or Equitable in the UK, both of which have had significant international impacts. And we face other challenges, for instance, the looming crisis in the defined benefits schemes particularly internationally. And although defined benefit schemes are no longer a large part of Australia nevertheless, any impact on the reputation will impact in Australia.

All of those things mean that globalisation will have an impact on the profession. And the profession needs to respond globally. There is now some part of the international actuarial association, which is starting to recognise that it must respond globally. Responding globally has good consequences and bad consequences because if you respond globally sometimes you take away the opportunities to deal with things locally.

Martin has talked about the impacts and some of the opportunities. It's worth just talking a little bit about the role of the Institute of Actuaries of Australia in the international field. I don't think we often think about it, but Australia, the Australian profession is probably at least in the first half dozen of professions, of actuarial professions around the world. Obviously the USA would be the largest, albeit in three different bodies, but nevertheless would be the largest. The UK the second, probably Canada the third and I suspect that we run fourth. Which means that not only do we play above our weight, but we probably have to think about playing above our weight. We cannot think about ourselves in local terms.

So as an actuarial profession of that size we do have a responsibility to contribute in the international arena. And there's no doubt that we do. At the international actuarial association meetings that I've attended, Australia probably has the largest per capita participation of any country. Notwithstanding the fact that we are the furthest away, it takes us longer to get there, and we have to spend a lot more money doing it. Nevertheless, we've made a contribution. And it's a contribution that is well recognised.

Tony Coleman has led the thrust of the international actuarial association into risk management and Andrew and Martin in Rio have led the thrust for a significant review of our governance, or of the governance of the international actuarial association, which as most international bodies at the moment, are very unyielding, cumbersome and under resourced. And the Australia profession, has taken to Rio a significant proposition for reviewing that international actuarial association.

Now what value does that have to the membership itself? It's a significant responsibility to take on. I think it does have a significant value to the members locally. First of all, it enhances the reputation of the Australian Actuary, which is already high. It enhances it overseas, and given that some 20% of our members practice outside Australia and that percentage will probably be increasing, then the higher our reputation stands, the more likely are our members to find opportunities overseas. So I think that first and foremost it has a significant value to Australia.

I think we should also recognise that we are in the education business. And that we are recognised as one of the leaders of actuarial education around the world. Again, the education business to some extent is like any other business. The greater the quantum you can deliver, the more economic it will be. So if we can leverage up our education processes around the world, there is a significant economic benefit potentially back to the members in Australia. So there are two significant values from playing in the international arena and I think that we should bear that in mind as we go forward.

On our own doorstep, we've continued to puzzle over our role in Asia. We have more actuaries in Asia than in any other place outside of Australia. We have a well-recognised reputation and we have encouraged education there. But we still do not, as Martin has pointed out, have a cohesive strategic plan. And we should recognise that actuarial demands in Asia will explode.

By any measure, no matter how conservative the needs in China and the needs in India are, they will be far beyond almost the capacity of the whole actuarial population of the world to satisfy them. We won't be the ones that do all that, but we can play a role and we can significantly contribute, and we have significant opportunities there.

There is only other issue that I'd just like to comment on. Martin has talked about the definition of the actuary; of what is an actuary; whether what we call an actuary tomorrow should be something different from what it is today; and whether it should be, in a sense, an associate plus some other qualifications.

I guess I've struggled with this for sometime, but now have firmly come to the conclusion that it is an absolutely essential move for the actuarial profession not only here but around the world. Too many good people, too much of our intellectual base is lost from the profession. It's not just that we are losing numbers, as people go to places like the investment banks, but we often lose the cream of our intellect. And we need to draw that intellect back into our profession. This is a most effective way of doing it and I think we should take up that challenge.

So I would encourage you Martin to continue that and to push it as fast as possible. So once again Martin, my congratulations on your address. I think you've talked about evolution, but I suspect there are some quiet revolution in there, and let me encourage you to pursue it as hard and as fast as you can. Thank you.

Andrew Gower BEng (Hons)

Firstly congratulations to Andrew on a fantastic year as President and good luck and congratulations to Martin for reaching the position of Presidency. I'd love to in future follow in your footsteps at some stage, although I would be extremely worried if it was a two-year term. It will be interesting to ask that question at the end of your year Martin, whether you still feel the same way.

Education is a part that I'm deeply involved in at the moment as I'm currently studying Part III. I view the new system as being a great enhancement over the old system, but as Martin says, there are some teething problems. Professor Baker's recommendations have to be implemented as soon as possible over the coming few years for this to be continued to improve and for actuaries as a group to be seen as leaders.

The education in Part III also needs to be kept up to date. It is no good discussing previous standards and out of date material in education, although people in the practice areas are working two or three years further down the track. This was one of the key recommendations of the Morris Review over the Equitable, where basically Sir Derek Morris found that the UK education system was not up to scratch and had not kept up to date with the recent areas of financial economics. It is also a key thing maintaining this across the region.

It is interesting to note that the UK has introduced newer examinations specifically for South Africa, which are based around South African regulatory regime and standards and other associated areas. It would certainly be a recommendation that we invest similar resources on developing areas across Asia in a similar way, especially Hong Kong and Singapore. These would be the first two areas, especially in life insurance where there are significantly different environments at the moment operating.

The future development of this profession is one that will drive my career over the next 40 years as I slowly mature as an actuary. Hopefully firstly become an actuary and then mature as one. At the same time as developing newer areas, it is also critical to remain thought leaders in the traditional fields. Without that thought leadership we will eventually lose our reserved positions, which was another recommendation of Sir Derek Maurice. With the loss of those reserved positions, one must ask, how many people would actually want to become actuaries when they can just take the easy route? Do an actuarial degree at Uni, not do Part III and eventually be approved by APRA to be an appointed or approved actuary.

Graham before said that he believed that it was inevitable that we should go down the route of having an actuary defined as being somebody who has only completed a certain stage of their education. I'd actually say the exact opposite. Standards must be maintained. It is no good having people who call themselves actuaries who are unable to provide actuarial advice in a meaningful and thorough way. Although I would be happy to take on other people's views on that and change my own view.

I'd also like to suggest that another definition and a potential way of becoming a Fellow may be through experience, with approval by the council to be given after a certain number of years. eg. 20 years of experience before potentially becoming a Fellow. It is no good necessarily having people who are considered Associates of the profession and not deeming themselves as being actuaries in senior roles in their companies. So just to finalise, thank you Andrew for being such a great President, and I look forward to working with you Martin in improving Part III and the future.

Andrew Matthews BCom, FIAA

I feel inspired by the previous speaker and also inspired, Martin, by your paper because it really got me thinking about the question: 'What do we have the opportunity to become?' Something that stood out to me was the number of times you talked about trust and professionalism and it started me thinking about - 'what is trust?'

Here is a quote I came across with a formula:

$$\text{TRUST} = \frac{\text{RELIABILITY} + \text{CREDIBILITY} + \text{INTIMACY}}{\text{SELF INTEREST}}$$

[Source = The Trusted Advisor – Maister, Green and Galford]

You've covered reliability with professional standards, credibility with peer review, intimacy with communication skills, and self interest with public interest, so I offer you that as a reference.

The next section of your paper, is the vision statement It is interesting to see, the vision statements of the three professional bodies (Australia, USA and UK) It's interesting because they read as 'to position the profession to be sought after'. The American one was 'that the public recognises actuaries as...' and the UK one was '...the profession will be known for...'. At no stage do we actually say that we will deliver or what will be the result for others of us being 'sought after', 'recognised or 'known'.

So the question I'd like to put to you as President, after reading and getting to the full stop at the end of our vision statement, is: if we get to being 'sought after for valued advice and authoritative comment', should we extend the vision to state 'what would be the result of that?' Is it as you said in your opening, along the lines of facilitating decision-making that makes a difference, and that there is awareness of uncertainty? Thank you.

Ron Champion FFA, FIAA

I'd thought I'd say a few words while others are considering their contributions to the discussion. Firstly congratulations to both Andrew and Martin. It's over 20 years since I was in partnership with Martin and delighted to see you assume the presidency Martin, I'm sure you will have a very productive year.

Being as old as I am, I can really relate to this evolution. I served on the first committee, which drafted the Australian code of conduct, and the first committee that drafted the professional standard in Australia. Accordingly, I can see how much more difficult it is to draft these documents today than it was 20 or 30 years ago, and I'm sure it won't get any easier. Otherwise it has been very pleasing to see the development of the profession over the 40 years or so that I've been a Fellow, and I am very disappointed Martin that you didn't respond to the sort of current trends and talk a bit about intelligent design which is popular in evolutionary fields these days.

I don't think it is intelligent design in the way that George Bush and others are talking about it, but I think it's intelligent in the way in that the profession has found ways in which it can expand its field of influence. I think it continues to have to find those ways and really have to concentrate, not trying to be all things to all men, but have particular target areas from time to time and deal with them. And obviously the one from your paper is health insurance, where you have asked, I think, half a dozen questions and nobody as yet responded to the answer.

One of them is dear to my heart, which is: should the industry remain mainly mutual? When I wrote my presidential address I said most of us were working for mutual companies but I didn't think we would be much longer. And I only got one comment on that whole section I wrote there, which John Pollard sort of said, well that's interesting. And not another soul said another thing about it. And I think perhaps 'Why shouldn't the industry remain mutual?', and I'd sort of perhaps rephrase that question.

It seems to me that the whole of the regulatory climate at the moment is mitigating against mutuality and I don't see that necessarily should be the case. But I think in health insurance more generally, we have had one policy initiative accepted in recent days, that's life time rating. And I think we have to look more in depth, not just trying to titivate the present system. We really need to decide whether more far reaching changes be made.

It always has seemed to me quite anomalous that if we go to see the GP we expect to recover most of the costs. On the other hand if we get our television repaired or our dishwasher repaired as we got today, we expect to pay a lot more than what we pay for the GP. And it seems to me that there is a lot of dollar swapping in the health industry and I think we need to really think, is this the most efficient way?

Again I think there are problems because of the interface between public and private provision, just as the main problems in the superannuation area for years have been that the integration

between the public and private provision at retirement date, the social security means tests and those sorts of things. So I think we have to really go back to try to influence health insurance.

I'm pleased you also mentioned health financing generally. I think we need to attempt to get a really fresh approach or question every aspect of the present system, which has been pieced together by the political needs over the years.

The only other question or comment that I have on that is, Martin, what you've said in 10.3 about the concentration of skills rather than practice knowledge. On the other hand you said in your opening remarks, perhaps we should have a really detailed health insurance segment. These seem to be at some extent at cross-purposes. I would have thought we should be devoting it to risk insurance of all descriptions because I think a lot of these principles that can be applied are the same, whether they are ISR or Medical malpractice, which is close to my heart at the moment. So I just put those comments in and challenge a few of you younger members of the audience to come up and criticise the President or congratulate him. But I congratulate him.

Andrew P Gale BSc, ASIA, ASA, FIAA

Martin refers to the role of the Senior Actuary and I think it's a very important topic. We talk about the local actuarial profession and the global actuarial profession; at a more micro level the Senior Actuary provides leadership to the actuarial staff within an organisation. The Senior Actuary of that organisation, can play a huge role in encouraging the other actuaries in their organization to support the work of the Institute and support standards of practice.

In relation to health, Martin has talked about the need to develop a Part III course. This has been on the agenda for a number of years now, and the difficulty is that we have limited resources, but the desire is certainly there to develop such a course. We also need to consider how wide spread the appeal would be in the student population. The course would need to be of sufficient content and

breadth to justify a separate subject. Health insurance, while it is half the size of the general insurance industry, is certainly not sizeable enough to justify a Part III course on its own. Extension to cover health financing is a worthy objective. Would that be enough for a Part III subject in the current environment? These are some of the things that need to be considered in the development of a Part III health course.

Ron Hunter FFA, FNZSA, FIAA

It is with some trepidation that I come to the microphone having been away from the Presidential role for about 17 years or so. However, congratulations Martin on taking up the baton.

As every year knows it's Melbourne 2006 Commonwealth Games, and so taking up the baton is much more appropriate here in Melbourne than merely passing on Presidential chains. You can tell Mr. President that I have passed or am close to passing my use-by date.

For I would like to mention just a couple of things, which are operational matters. In my time, members used to ring the President if they had anything that they wanted to talk about. And the President was expected to solve the problem. And then he passed it onto our secretary Craig Ginnane and some action took place.

Now of course things have changed and we ring the CEO. Well, I put one question to you. Have you tried to look up or phone another member whose address you don't know. Our website must be one of the most difficult sites to visit. I happen to have the occasion to contact our new President Martin, and asked him to ring me back. It turned out that it was easier for him to email me to ask me for my phone number than it was to log into the site and look it up.

Okay, this is something somebody might like to look at. I find the same thing if I wish to log on to my site. I'm inevitably told that my password has expired and that I have to send an email to get the computer to send me an email containing a new password. Once I've

come through all these trials and tribulations. I try the new password and it says to me, 'I'm sorry your password and your email address don't reconcile and it tells me that three more strikes and I'm out'. Let's try and make it a little more easy for some of the older members to get through to the institute.

However now that you have indulged what I might call one of the 'grumpy old men' reactions, Martin, may I say that the main reason for my coming to the microphone tonight was to mention that this coming year was the 150th anniversary of the Faculty of Actuaries and that we are having a visit from Harvey Brown, the President of the Faculty, and that we are organising a dinner here in Melbourne on the 8th of April for all the Faculty Fellows.

Our system hopefully has tracked down and invited most of those to jot down the date of 8th of April in their diaries, but just in case Faculty members here haven't been approached, or having been approached haven't yet responded, could you please get in touch with David Dickson and let David know that you'd love to come along and meet up and celebrate the Faculty's 150th anniversary. We're hoping also that Martin will be our guest that evening representing the actuaries here. Thank you very much sir.

Andrew C Gale BA, MBA, FIA, FIAA

Martin's address is an excellent overview of many of the challenges and imperatives facing the profession. It certainly covers the areas regarding education, professional governance, international and so on, very well.

I would like to string together a few of those imperatives and challenges, which Martin has posed with perhaps a couple of comments regarding part of the solution. And the comments relate in particular to Martin's concept of the evolving actuary and are also relevant to Martin's suggested enhancements to the Mission Statement; which was about increasing the public recognition of the actuarial value add.

One of the things Martin comments on in his paper are some of the statistics and movements in particular practice areas: the huge growth in general insurance; and probably a bit of a surprise in terms of the resilience of the superannuation numbers, which was great to see. The one, which caught my attention, was the management roles, which over the measurement period of 1992-2005 had halved. So we had this significant decline of actuaries who described themselves as being in management positions. I suspect, but I don't know for sure, that some of this reflects the following:-

- Declining general management roles in life insurance
- Probably the centralisation tendencies of life companies. They used to have far flung empires, New Zealand, all the state coastal operations and the like. There has been a lot of centralisation, which has probably reduced the number of management roles over the years.
- And I think in the life companies the finance functions sort of strengthening as a domain, strengthening its influence relative to actuaries in many areas in life companies.

So it's interesting to sort of postulate why that might have happened. Perhaps it highlights a greater need for actuaries to have the broader business acumen, a sort of commerciality.

I will now return to my favourite hobbyhorses.

Firstly, having the leadership skills to step up to the mark in terms of the opportunities, which do exist.

Secondly Martin poses the 'lost sheep' challenge and how we better retain the best and brightest, including earlier recognition of actuaries. Some key strategies for the 'lost sheep,' obviously relevant to CPD, are promotion of the value proposition to employers. So people involved in banking and finance and those sorts of areas, promoting the actuarial value proposition.

But part of that value proposition, I believe, and part of our CPD needs to relate not only to the technical abilities of actuaries but also to their broader conceptual contribution. Again, the business acumen, communications, leadership is part of that value proposition.

Thirdly emerging opportunities and the positioning of actuaries in risk management and banking of finance. Again we have the imperative: how do we promote the actuarial proposition to employers and not as stakeholders and how do we strengthen that valued proposition?

Now I know Martin is a great believer in the increased employer focus, which is entitled 'the strategic plan' and strengthening that value proposition. So I'd just like to conclude by saying if we have a focus on the business acumen; on the commerciality; and I think, really importantly, on how we enhance and develop the leadership skills for people in our profession stepping up to the mark, that might make a worthy contribution in some of those areas. With that, Martin, over to you to respond.

Martin Stevenson BSc, FIA, FIAA

Thank you, Andrew. I will briefly summarise the main points of the discussion. But firstly thanks to all the people who did contribute to this evening.

Chris White went back over some of the reasons why we started on this course of re-doing all of our professional governance. What took me slightly aback is that he reminded us that there was a whole set of recommendations still sitting on the table that someone should look at. I thought we had enough on our plate going forward, but Chris quite rightly reminds us that there are some other important issues still around.

Richard Cumpston made a very timely reminder that what really takes the Institute forward into new roles is individual actuaries. And when you look back at where we've made great strides in new areas, there is no doubt at all that it's the entrepreneurs amongst us who do lead us. But that doesn't prevent the Institute playing a major role in preparing an environment on which the entrepreneurs can build.

Graham Rogers spoke about globalisation and emphasised its importance. When I started my speech saying how grateful I was for the work of people who have made the Institute strong, Graham was certainly one of the people I had in mind. Graham also said it was essential to bestow the qualification of actuary on an associate plus.

And the next speaker Andrew Gower said that no that was a retrograde step because we had to maintain standards. I do not see why recognising an actuary means we necessarily have to lower standards. I do see an analogy in the medical profession, where someone becomes a qualified doctor. But then you would never go to a doctor - full stop- if you wanted your knee reconstructed. You would go to an orthopaedic specialist. But that doesn't mean that you regard the original doctor as having a low ability, it just means that you require the specialist skills. And it's that kind of model that I believe is appropriate going forward.

Andrew Gower also wondered whether I would change my mind about a two-year term. I don't think I will change my mind as I see many advantages in the two year term. However if we adopted this proposal then other changes would need to follow. For example at the moment we have the process where you become the vice-President, then the senior Vice-President and then the President. I don't think that would continue if we had a two-year term President. And I do have some other thoughts, which I'll share with Graham and his role as chairman.

Andrew Matthews gave a delightful formula, which went something like:

TRUST = RELIABILITY + CREDIBILITY + INTIMACY

SELF INTEREST

which is a great actuarial approach. He is right to emphasise trust to be of great importance. In the UK the lady who heads up what is the equivalent of our Consumers Association, went on TV and made the comment along the lines of, 'trust an actuary, I would just as soon trust Harold Shipton'. Dr. Shipton was the man who was charged with murdering about 150 people. This shows the extent to which the trust in the UK profession has been dealt a severe blow by some of the events there.

We in Australia have been spared the full fury of that. Ron Champion raised an interesting dichotomy, I talk about skills and the need for generic skills on the one hand and then I talk about a health course on the other. I do not necessarily see this as too contradictory. Again the medical analogy applies and law as well. Society is becoming more and more specialised, and more and more professional specialties have to be introduced to cope with a society that is becoming more complex.

So again we do have to operate on the two planes. To be seen for branding purposes to be the holder of a number of generic skills, but to provide that deep expertise which is more and more demanded. I do think in this model by the way, that we have to acknowledge that we cannot be the educators for everything. And I think we should be prepared to use other bodies to enhance our education.

Andrew Gale – that's the Melbourne Andrew Gale – emphasised the sort of dilemma facing health, and there are a lot of challenges around. But the resources are fairly scarce.

Ron Hunter, thanks for your contribution. In defence of the Institute it is continually working through the secretariat to improve functions and the improved functionality of the website is very well enhanced.

And finally Andrew, thank you, Andrew Gale. He pointed out that the number of actuaries in management had halved. That is perhaps of slight concern but in both respect of that and in respect of the need to keep the 'lost sheep' he's made a number of very helpful suggestions, which I've noted and will take ongoing forward. So thanks everyone again, and for those of you who are joining us for the dinner, welcome and come along. Thank you.

Andrew C Gale

As some of you are joining us for dinner this evening and some aren't, I would just like to conclude that it really has been a great privilege to be President this year. It's an enormously rewarding role, it's a diversified role, it makes for an exciting year and it's great to be able to make some small contribution to the Profession. Martin, I know, will do an absolutely terrific job and I would like to wish you all the very best in your year ahead.

Sydney

Tim Jenkins FIA, FIAA

Well let me begin Mr. President, by thanking Andrew for his inspiring, energetic and focused term as leader of our Institute; and also by congratulating you, Martin, on your election to succeed him as President. We all wish you every success in this important and demanding task.

Also I'd like to congratulate you on the excellence and clarity of your Presidential Address and the roadmap it provides for our journey as a profession. In your address you described that journey as one of maintaining our leadership in traditional actuarial areas, expansion into further fields, and attending to our Professional Governance. The latter you described as raising the level of our Professional standards, increasing our accountability and transparency and deepening our commitment to serving our clients, employers and third parties in the public interest.

Specifically you describe a co-ordinated programme of reform of our Professional Governance covering the Revised Code of Conduct and Disciplinary Scheme, a revised standard on continuing Professional Development, a new standard on External Peer Review in Life and General Insurance and the start of an ongoing effort to re-draft and re-issue our Practice Area Professional Standards in order to make them mandatory.

Each element of this programme will, you suggest, result in 'value add' rather than irksome compliance. To my mind this is a truly important observation, which I'd like to explore a little.

First I'd like to revisit for a moment the nature of the Profession. According to Professions Australia, a body which this Institute belongs, a Profession is: *'A disciplined group of individuals who adhere to ethical standards and hold themselves out as, and are accepted by the public as, possessing special knowledge and skills in a widely recognised body of knowledge derived from research,*

education and training at a high level, and who are prepared to apply this knowledge and exercise these skills in the interests of others'. Inherent in this definition of a Profession, is that a code of ethics and standards of performance govern its activities and are enforced by it. If these standards are upheld, the Profession continues to be acknowledged and accepted by the community. There is in effect a compact between the Profession and the community.

Next in this exploration, and bearing in mind the HIH and James Hardy incidents in Australia and The Equitable in the UK, I'd like to examine what happens when this compact begins to break. In 2004, Sir Derek Maurice conducted a review of the Actuarial Profession in the UK. He identified a number of weaknesses in the framework of the self-regulation of the Profession there, including that Professional Standards had been weak, ambiguous or too limited in range and perceived as influenced by commercial interests; an absence of pro-active monitoring of members compliance with Professional Standards; and a profession that has been too introspective, not forward looking enough and slow to modernise.

As a result, he concluded that a self-regulatory framework had proved to be inadequate in protecting the public. In other words the compact between the Profession and the Community had broken down in the UK.

So what has been the consequence of this state of affairs? Well the self-regulatory model has been replaced in the UK by a new model, which involves independent oversight of the Professions' self-regulation, by the Financial Reporting Council, which is the oversight regulator of the Accountancy Profession. The areas of oversight are education and continuing Professional development requirements, ethical and professional standards, duties and obligations to protect the public interest, monitoring of compliance with Professional Standards, and administration of disciplinary procedures in the event of possible misconduct.

I think it is interesting to notice how this intervention into the independent governance of the Profession in the UK matches one for one the attributes and responsibilities of a Profession that I've quoted from before. And I think it's also interesting to notice how it matches the programme of reform that has been undertaken by Council; the programme that you, Martin, have described as Professional Governance.

This to me is the essential value-add of this programme and each element in it. It strives to maintain the independence of our self-governance of our Profession in Australia and thereby to avoid the constraints and interventions, and to avoid the reduced initiative, adaptiveness and responsiveness, that would have inevitably be the result of being subject to statutory oversight, presumably, if it were ever to happen, by Australia's own Accountancy oversight body, which as in the UK is also called the Financial Reporting Council.

Furthermore, I know from first hand experience that the Institute's Council has provided strong leadership by setting the strategy and establishing the principles for the Professional Governance Review. Members of the various taskforces have been alert, because of the requirements of Council, to both to the shortcomings, such as those that I outlined which could undermine public trust in the Profession, on the one hand; and to feedback from members on the other. The aim is of course to ensure that the way in which we modernise the Governance of our Profession also brings benefits to the practice of our Profession.

For example: consider the new Code of Conduct. It provides for the first time, complete clarity of when a Professional service is actuarial advice and hence when associated requirements governing impartiality, expertise, qualification as an actuary and formal reporting come into play. On the formal reporting of actuarial advice, the Code takes into account the realities of communication in a fast moving world and reconciles them with the need to draw together advice on substantive matters in a considered, written way. Also the code defines for the first time, the precise nature of a member's responsibility to the public interest, rather than this being

some vague duty. These, and other changes across the programme, bring major benefits of clarity and practicality as the same time as they modernise our framework.

The Code moreover, now provides the core document for our self-regulation by setting the tone and defining the terminology for use in the process of our review and development of all professionals' standards. The aim of the Standards Review will be to ensure that there is consistency between the standards covering all practice areas, that the standards are both robust and enforceable, and that they provide support and guidance for Actuaries in meeting their professional responsibilities. It's a huge but vital undertaking.

The success and vitality of our Profession has been sustained over the years by two precious gifts: our Professions' *'roots of responsibility'* and our professions' *'wings of independence'*. Your address Martin, reminds us that we must ensure that we preserve this heritage and pass it on, not only intact, but stronger for an evermore challenging world - and for all to see. I thank you Martin, for this and wish you all the very best for your Presidential year.

Paul Carrett BEc, FIAA

I guess you would say I'm a practicing finance actuary. I just wanted to touch, not especially broadly, but on a couple of specific issues mentioned in Martins' address. And certainly Martin, but before I begin I would congratulate you on your appointment and best of luck with the year. I know you will be working hard, hopefully doing some work for employer as well and congratulations to Andrew on no doubt what has been a personally fulfilling year in many respects too.

What I guess, my own personal perspective is ,, as I mentioned before, very much as a finance or an investment finance actuary. And I wanted to talk about some of the issues Martin raises about our chances of being successful as actuaries moving into the finance area and the investment area in general.

Personally I'm actually very optimistic of our chances of success in this area and let me tell you why. First of all the numbers in that table look extremely promising, the trend is very strong. There are increasing numbers of actuaries working in, particularly in finance, banking and investments across the board. My own personal view is that for all its floors, many of which I must actually be held personally accountable, our finance education is very strong. At university level and certainly at the Part II and Part III we provide our actuarial graduates and up and coming actuaries with an extremely strong broad based finance education. When my experience in interviewing people going for finance type jobs is that they are very much specialists in particular areas. It does create some issues for us. There is a gentleman that I work with, indeed, to some extent decides how much I get paid, so when he talks I listen. He made the point that the specialists make you money, but generalists are people that drive your business.

And I think that one of the issues that we will face as we move ahead, is that, despite for all the clichés about actuaries being specialists, in the finance area and the way we teach people, we are actually teaching finance generalists. These are people that having come through the system will know a lot about interest rate derivatives, credit derivatives, equity derivatives, company valuation and life insurance, superannuation and so on. And that's probably as broad an education as you can get in the finance field. And in terms of getting your first job, there are other people that have more specialists' education that can perhaps make money faster than you, at least at the start.

And I guess one of the things I do take encouragement from, is that I look at those 200 odd people in investment and finance and project forward, say 10 years from now when they all have 10 years more experience and hopefully they are hiring other actuaries, that some of that broad-based experience they have they'll be able to apply to good effect. So they're not just say running a interest derivatives book, but they are head of the whole derivatives team or the head of the M&A team and they know when they are getting

ripped off on an FX forward or perhaps on an interest rate derivatives or a quanto or such.

One of the other reasons I have hope of us penetrating the finance field in numbers is by virtue of the fact that we have a large number of actuaries working for bank assurers or broad-based financial institutions. Now I can't speak other than anecdotally, but there's no doubt that does create opportunities despite obviously some barriers to actuaries working for those institutions moving across into other fields. And Martin gave a good example in his paper of one bank that has its' treasury area basically over-run by actuaries. Obviously a positive development. And I'll be going long there shares come tomorrow, compliance willing.

But some of those actuaries doing so called traditional work, have obvious opportunities to show their wares to other parts of their organizations. I guess my advice to those people is that to make yourself, to actually get into those other areas, and they are generally pretty good at protecting their turf, you're going to have to give a little. I think there's going to be quite a few secondments that will have to, some of you better staff that will have to be made. There will be a lot of work done for free and no bonus this year with the hope to getting some work next year that helps you keep your people and indeed attract good people to your area.

The long term challenge is in getting people with actuarial back grounds and actuaries into the finance areas, I'm obviously convinced that that success will come with time. One of the longer term challenges and identified by Martin as, I guess, the lost sheep type issue, identified, is, how do we keep these people engaged with the profession. Now hopefully to some extent by virtue of the fact that this is the larger group, there is more incentive for them to get together from time to time. It becomes quite an impressive network in terms of hiring and swapping ideas, maybe ripping off some IP from other areas and so on. And to that extent, remaining a part of the Profession is extremely valuable.

In my speaking again from personal experience, my contact with the Profession has been extremely useful in a very real practical way. The number ideas from general insurance or from some of the subjects you've probably learned and forgotten several times from University days in terms of exposed to risk, and graduation, the problems in finance that those things have direct applicability to are quite important.

In the longer term, how do we keep these people engaged? Well, to some extent I think Martin hints in his address that maybe we need to start thinking about how we engage with other professions. There are things as simple as maybe putting on the odd professional conference and inviting some of the lawyers that are expert in some of these areas along. That creates an incentive for some of these actuaries for instance, working in mergers and acquisitions or specialist areas of securitisation or indeed capital markets, to come along to broaden their networks. As more and more actuaries work in finance, as well as academics work in finance, those academics being actuaries or close to the profession, that indeed creates further incentive for people to remain involved.

I guess at a personal level I would also encourage those people, probably many of them not here today because they are all very busily working to earn their Christmas year end bonuses, if they're on calendar year systems, is that there are innate benefits from being involved with a profession. It's again speaking from quite close personal experience, the opportunities of being involved in the investment committee and being able to work closely with people like the Mike Barkers and Paul Sculleys of this world, there are opportunities there to just get access to seeing how some really clever people think and some very experienced people who have seen several market cycles, that you may not pick up in your day to day work. Watching the two gentlemen here at my right, run a meeting is something to behold. And these are the sorts of skills that you may not, that are obviously jobs at the UN await both of them following this 12-month period.

But those are things that you may not pick up in your day-to-day work, particularly with the specialist nature of much work that goes on in finance. And so what we need to do to a large extent is to sell some of these, particularly the younger people coming through that there is a considerable advantage not just a member of the profession, but an engaged member of this profession. For it is a great profession with many good people and lots of great ideas. So congratulations, to both of you and best wishes for the next 12 months.

Barry Rafe BSc, FIAA

It is a bit nerve wracking for me, having to stand up the front like this. This is a big day for Martin, and it's also a big day for me. It's the first time I've ever given a comment at the Presidential Address. Thanks very much for this Martin.

I did actually take to it enthusiastically and I wasn't disappointed. I particularly relied on your statements that said that the main messages in this address are summarised in the remainder of this section one. I agree with the thrust, but there are a couple of things that I think we need to be careful about accepting. One is our membership growth. And I agree when you look at the tables, depending how you interpret the data. The reality is that growth is in the rounding. I don't think we should be happy at the growth of our profession.

If you look at our target market, it's growing by 10-20% p.a. Banking is the biggest industry in the world and the most profitable industry in the world. Superannuation is compulsory in Australia. When I look at our growth statistics, it's to me, an indication that we're actually losing significance, rather than gaining significance. We're growing a lot slower than the industries that we are advising. So let's be careful about being complacent on membership growth. I think that we should be growing our membership by at least 10-20% pa.

Now look at how many accountants there are and how many lawyers there are. Their professions are growing by 10-20% off of a base, which is significantly higher than ours. That doesn't mean all legal students become lawyers. But what they do is they take that training into the industry. And I think doing supply and demand analysis isn't the way for us to plan. I think we're here to build supply. And demand will flow from supply. We need to, pump out new actuaries. We can do this without compromising standards. We need to get our heads around growing the profession by 10-20% per annum. Yes that's around 250-500 new actuaries a year. The current 2,500 members to grow 3,000 in one year this to 3,500 to 4,000 etc. So that's a pretty significant growth. And that's a mindset change I think we've got to make.

The second observation I have is regarding who should be able to call themselves an Actuary. Whilst I agree 100% with Martin, I think we need to be careful not to be too precious about this. We shouldn't compromise standards but we should flow with what's happening in the rest of the world. If we want to become a global profession, we need to use the same terms for what we define as an actuary.

I know of a person who has passed most of his actuarial exams. He's a successful fund manager for a large industry fund of about \$8 billion; they are one of the best performing industry funds. He is referred to by us officially as a senior student. Now he may not qualify as an actuary under the new standards either, but senior student is not what we should be calling this guy. It's an insult. And if his employer wasn't paying his membership, he would drop out. So we need names, other than actuary, we need to recognise these other people who are very successful.

The Professional governance review process has been a significant task for the Institute this year. I don't know how the institute has done what they have done but all involved are to be congratulated. But all that's internal. We now need to get outside. I would expect that in 2006 both Martin and Catherine Baldwin should be walking the corridors of power. This isn't just to promote

the profession but also to get close to our major stakeholders and see what the major issues are from their perspective... This is a two-way street and I think the profession does need to support the actuaries at a senior level. We've got the power, we've got the brand in Australia, and so we should be using that.

On the issue of International developments I admit I am a real sceptic. I do agree that we are one of the leading actuarial professional organisations in the world. You can argue about why that is. I think that part of it is that we're one of the newest actuarial professions and we haven't got some of the baggage that the others have.

This leading position creates an obligation on us to help our peer groups. However, I think we are approaching this the wrong way. We seem to spend a lot of time and money sending senior actuaries around the world to work on various committees etc. This is OK as far as it goes but take the lead from leading global companies that lead by example. If our peer groups want to learn from us then let them come here. We should focus on the Australian profession and our issues and less on the global issues.

My last comment is on the evolving actuarial profession and I agree with your comments there Martin. I think that the most difficult issue is this emphasis on skills rather than practice. I was having a chat with Fred Rowley about this the other day. Actuaries are paid for their skill by their clients or employers. I think the power in the profession has to remain with the practices because the practices focus on the client segments. The danger however is that the practices start to believe that they are more important than the profession. This is where the presidential group and CEO need to skilfully manage the interaction. The profession comes first, but we should organise on practice lines. I think the important thing here is that whilst all the practices need to build their skills, the institute is here for everybody. Practices change in relative importance depending on the market demand but the institute is always here.

Congratulations on this address Martin. Also, well done to Andrew Gale, I think you had a fantastic year, and I agree that you've achieved a lot of the things you set out to do. Thank you.

Richard Lyon MA, ASA, FIAA

I have a confession. My confession is I'm an actuary.

Shame. I served on council, I've chaired education committee and NIPC, I've run task forces, I've marked exams, I've written papers etc, etc. My father is an actuary, my wife is an actuary. It's in my blood. I'm an FIAA, I'm an affiliate of the UK institute, I'm an associate of the Society of Actuaries.

And I'm proud, I'm proud of the actuarial tradition, which I describe as clear thinking, social conscience and a long-term view. I'm proud of my father, president of the UK institute some years ago, and very much the kind of actuary that any actuary should aspire to be. I'm proud of my wife, but she wouldn't claim to be actuarial and she wouldn't say that all actuaries should aspire to be her. The relevance to the paper of those comments in section 4.6 and as good actuaries we'll all turn to 4.6 – 'The lost sheep'. The last paragraph of the Lost Sheep in which Martin says that if we graduate more actuaries, in the course of time our profession would be transformed.

Now we've heard that 10 is not enough and maybe it should be 250, but the numbers don't really matter. What matters is the proposition. The proposition is that all we have to do is get them in and we are transformed. Martin in his brief comments talked about CPD and the fact that having qualified that was not the end of the road but the beginning of the road, or equivalent words we all use them. And I think he should have remembered those words when he wrote that section.

I myself, clearly, have deeply ingrained as an actuary, a tradition of actuary. I find that when I look, that I hardly identify with my profession. About the only link is that initial statement: I'm an

actuary. That gets me out of all sorts of trouble at work. It explains why I behave the way I do. Well it doesn't, but it seems to. So it works for me. But I don't feel that I am part of and supported by a profession. Not the profession that I thought I would be at least. It is not to me a tangible source of support. Increasingly it is just an irritation. It is simply not relevant. It's a great club, fantastic to go to Cairns and places like that and talk about things and at those times to be reminded of all those kind of actuarial aspects and ways of looking at things, but it does not permeate my life.

I'm the CFO of an underwriting agency, I don't do actuarial work. Even when I was doing actuarial work, I probably wasn't doing actuarial work. I wasn't doing things that technically required an actuary to sign them. And certainly from a point of view of the clients and the value I gave my clients, it wasn't things that needed and actuary to do, it just needed me. So I've looked at these memberships. Why stay in the Society of Actuaries, US\$500/year I won't. I'm leaving. Why stay in the UK institute? I can't remember what that one costs, it's a bit less. I can't let my father down, so I'll have to stay.

Why stay in the Institute of Actuaries of Australia? Well this is very hard. Why would I, will I stay? Despite what my children think, I'm actually still young. I might not stay the CFO of an underwriting agency forever. I might actually want to practice in some form as an actuary again. And to be honest the only reason I can come up with as to why at the moment I stay in this institute and in this profession is to protect my right to practice in future.

Why am I here today? Well that's CPD, that's easy. Although obviously I'm in the minority even in CPD in this particular day because the turnout isn't what it should be with the numbers of actuaries that we do have.

So I'll congratulate Andrew for the year past and all the amazing things that have been done in the Institute, some of which I've noticed. And I'll congratulate Martin on his accession to the Presidency, but I would warn you, that job is becoming increasingly

daunting as we continue to fail to engage and re-engage me and countless others. And there are countless others like me who feel increasingly distanced from what we call a profession. Thank you.

Brent Walker FIA, FSS, ASA, FIAA

Over the years of I've known many Presidents of many institutes. Not just the Australian institute. And one President of the Society of Actuaries who I got very friendly with was a fellow with the name of Neil Parmenter. And he was President of the Society from late 2003 and through most of 2004. Neil and I became or have become very firm friends. He gave me some interesting insights as to what it means to be a President of a large body. And we had to think about our own body, because it is going to get larger.

In another 10 years time, we're probably be 50% larger even if we grow at the rate that we are growing now, and maybe 20 years time we'll be twice as big. And maybe a lot bigger, hopefully.

Neil told me that Presidency at the Society of Actuaries now is such an onerous job that it's really restricted to people who have retired or who are very close to retirement, quasi-retired. He was away from home, often 6 weeks at a time, and I can remember one time when he said he was away for 6 weeks, got home for one night and then was off again on another trip on Presidential business.

Now admittedly, his home was in Iowa and the Society of Actuaries is centred in Chicago, so he was, of course he had to be away from home a fair bit to go just on society business, you know, home grown business. But there was a lot of other aspects to it as well. So it was a very hard and onerous job. And this brings me to the point that Martin has raised, that maybe we should think of appointing a President for two years.

You know I appreciate that the job is hard enough firstly for one year, for two years, it's going to be a lot harder. That may mean that we need to start looking and doing what the Society does, and that is effectively finding people who are retired, or just retired or who are

going to retire to become President. So that's something that we need to keep in mind.

Then I started thinking about Presidential addresses. I wouldn't like to see a presidential address happening once every two years. I think we need to look at ourselves at least once a year. So that would be interesting for the President wouldn't it. First of all give a Presidential address which would be looking at all the beautiful things that are going to happen, and doing a lot of introspection but this second Presidential address half way through the term, you would have to say, well, what have I done? And what is still to be done? And where do we go from here? It would be a very interesting job for a President and also a rather onerous one I suspect.

The rest of my comments will naturally be about the health comments in the paper. Martin raised a whole bunch of questions in section 8.6 and I thought perhaps I ought to say a few words about some of his questions. He has asked are there sources of capital available rather than price increases to the health insurance industry? And in fact for the mutuals I guess it's not and that is a problem. He's also asked what level of capital the industry needed? And I don't think we really understand that yet, although I do believe that there are ways in which we can reduce the capital needs of health insurers. And I think we need to start thinking seriously about how we can do that.

But it brings up the question of mutuals? The health insurance industry was holding mutual until a few years ago, and most of the players are still mutual. But it's quite likely that Medibank Private will be sold next year. And that means that a fund the size of almost 30% of the industry won't be mutual. And then the third, I think it might be the fourth biggest fund won't be in essence mutual. The second biggest fund was thinking about de-mutualising according to the newspapers. So I think we'll see a 'sea-change' in the health insurance industry fairly soon.

But why were health funds mutuals in the first place? And I understand that the main reason was that they were to finance the public hospital systems. And the public hospital system was purely mutual. You know, they were public hospitals who were run by religious and charitable organizations. And so it seems very sensible that the financing body of these institutions would also be mutual. I guess the Government has got some thinking to do about the mutuality of the industry. I know some years ago, I did suggest to one of our governments that what they should do is actually tax the surpluses of the health insurance industry in the same way as they do the general insurance industry and let the mutualisation business sort itself out as a result of it. But at least that would enable the non-mutuals and the mutuals to do effectively compete on equal grounds. That suggestion hasn't been taken up as yet.

Another question was what new financial products will be required to fund Australia's consumption of health services in the future? Five countries in the world have introduced health savings accounts now. The latest in NZ with Southern Cross fund, the major fund in NZ has introduced Health Savings accounts and has been largely helped from health economists from Australia in doing that.

The jury is out on health savings account. There is no clear indication that they actually save money, but it's certainly a new financing mechanism. I think we definitely need some form of long-term savings in health just to finance the health costs of older people. And the more people we can encourage to save for their health costs the better. But I guess we'll still be a while before health savings come to Australia given community rating principle and the rest of it.

He's asked if there should be more or less players. I'd like to see more players in the industry. The health insurance industry is incredibly oligopolistic at the present time, and I'm very worried that if Medibank Private was sold to existing players in the industry, it would become even more oligopolistic. I don't think that would be very helpful in the long term.

I'm not going to go through all the questions, but Martin did ask one on in section 8.6, he said at some stage a serious ethical debate must take place. At what point is the level of resources and expenditure too great to keep people who are severely incapacitated and/or terminally ill alive? Well, gee, that's um, this is a terribly important question.

But I think the even more important question is at what point should the community be funding the costs that arise from repairing people's damaged parts that are usually damaged from either misuse, abuse or possibly the lack of use? And that seriously is costing far more money than keeping terminally ill people alive. Should the community be paying for this or should the health funds be even paying for it or at least all of it and should people be made to pay for some of it?

I think if we were told that we either use it or we lose it, or have to pay for it to be fixed, it might make us use it rather than forget to use it and then expect somebody else to pay for it to be replaced. You know, some prosthetics now cost enormous amounts of money. The average pacemaker, well, when I say pace-maker, defibrillator/pace-maker: the latest advances in pace-maker medicine costs around \$75,000. And they can be inserted in a day only operation. So the health funds get hit for 23 hour hospital stay and they get hit for close on \$100,000.

Some health fund executives now jokingly refer to their surpluses in terms of number of pacemakers or their deficits in terms of the number of pacemakers. But you can imagine the volatility that this brings to health insurance claims business. You don't know whether you are going to get two pacemakers next month or none? It can be very worrying.

I just want to tackle the question about health expenditure. Health costs to go up very fast and it's largely due to medical technology. Prosthetic appliance costs per pricing unit in Australia is still rising at 19% p.a. in the last two years.

But over the time since health funds have been funding then it's been 25%p.a. It's got to about \$120 per pricing unit now, so you know, the costs are starting to bite.

Everybody is getting scared about that. But there is no sign of it really reducing. But AWE went up 6% last year. Now most health costs are tied to labour costs. So with AWE going up 6% you can see that there's a fair bit of impedance there to push health costs up as well. Health only went up 4.6% last year, but that was due to a lot of government changes in the pharmaceutical scheme and Medicare.

So he then said: 'to what extent can health expenditure be affected by preventative measures and what would be an effective framework in measuring the cost of benefit of preventive programmes?' The problem with that question is that it's very, very long term. I do have a couple of other things that I wanted to say, but I think I'll leave it at that. Thank you very much. It's been a very good paper.

Fred Rowley MA, FIA, FASI, FIAA

Good evening. I congratulate you Martin, on this splendid address. Perhaps what I can do, briefly, is to look at it from a slightly different angle.

I would say that the address has three dimensions to it. One dimension is a production plan for the actuarial product. The second one is the governance plan. And I think what I've heard in some of the responses to it, is that we need to see more of the marketing plan. Nevertheless, those are the three main dimensions that are in there.

My first observation is that we are governed in what we do by the circumstances around us, and the governance plan was the crucial element for the past year. I believe what was achieved was an enormous achievement in the time allowed.

When you look at Martin's address, a good deal with it has to do with the development of the actuarial product – namely, actuarial advice. Education, CPD, and research are the fundamentals of it. Communications, and our aspirations for how we want to see our people behave, are the essentials of the delivery mechanism.

Martin does also touch on the need for retention of the 'lost sheep' and addresses that specifically as a problem. And he does deal with the promotion and positioning of the profession with business and others. It is not so much that we aren't all thinking about those things, but that the cycles are where they are. Nevertheless, it is always good for us to hear what needs to be done.

I'm sure we're all aware of this need to build towards promoting ourselves better in the industry. The first thing the profession did was to invent its skill: but the very next thing it did was to market it within the industry. So those skills were being actively marketed before they were co-opted into the support of a regulatory framework. I believe that that historic cycle of development is something that will underpin the development of all our wider fields of activity going forward, and that's why the independence that Tim spoke about is so important.

Tim's comments made me reflect that if events here had gone the way they went in the UK (after Morris), it would have been vastly unfair, and a very poor reflection on what had been achieved here in Australia. In the UK, there were gaps and the profession was accountable for the gaps, but the gaps were left there with the complicity of the DTI, as it then was, who allowed the system to go that way.

Here in Australia, the regulatory framework advanced much further. Significantly, that advance was led by an actuary, some years ago, working in the Insurance and Superannuation Commission.

I agree enormously with Tim, that our independence is very important – and I'd say that the main reason that it is still there is because of the pro-activity of the profession in years gone by. It

didn't just make itself cosy, it went through some very difficult issues, and I think that pro-activity is there going forward.

Martin's address brings out some other key issues. It relates the history of what we've done with the governance cycle, and what remains to be done. It brings out the key issues and the key work items that will underpin the development of our production cycle. Yes, there is always more we can do, and we take on the message very strongly. I'm glad Barry mentioned marketing the profession industry. That is something that is in the forefront of our minds, and I know Martin is committed to it.

There were many other very good points raised earlier, but given the shortage of time, I won't go into all of them.

One thing that really does need clearing up is how we relate to Asia, and again Martin raises that question.

When we think about how we relate to Asia, we're thinking about how we relate to that part of the rest of the world that happens to sit closest to us, and it's a part of the world that Australia has very strong links with.

When I think of developments in Asia, I think of them in the context of what the profession is doing internationally. That context helps us choose what we do. I don't believe the Institute is an aid body, that should simply give things to Asia, but I do believe this is a global profession, and that we have a duty to offer leadership, and to take an educative and helpful role in that profession's development.

In broader terms, you can see that the US and Canadian Professions are focusing on the Americas generally. You can see that the UK is focusing on Europe, and it is equally natural for the profession here to focus on doing something in our time zone, and where we are well equipped to deal with it.

In closing, I'll congratulate you again, Martin. This is an address that not only tells us of some very, very worthwhile things that have been achieved recently, and the enormous efforts that have been made, but also points the way for the development of both the profession and our professional body into the future.

Andrew C Gale BA, MBA, FIA, FIAA

The only final comment I would like to say, is that it has been a great privilege to serve as President for 2005, and again wish Martin every success for 2006.

Martin Stevenson BSc, FIA, FIAA

Thanks Andrew, and I would like to summarise some of the points made this evening. I will only deal with the highlights. Overall there were many insights that were provided to us.

First of all was Tim Jenkins and when in my speech I said that I was grateful for the vision and commitment of people that have gone before, Tim Jenkins is certainly one person who has lived up to that ideal and has done an amazing amount of work for the profession in the past. Tim pointed out that the core of our new governance programme is the contract between the profession and the community. And he also pointed out that one of the reasons we have gone down this path is to avoid the situation in the UK, where rather than self-regulation, they have had external regulation imposed on them.

He picked up my point on 'value-add', and he commented that one of the main 'value-adds' was to avoid this loss of self-regulation. One of the other 'value-adds' occurs in our day-to-day work. One of the aspects of the code that has been emphasised is the need to communicate uncertainty to clients. And it has made me re-look at some of the work that I've been doing and realise that, yes, I knew that these assumptions I had made won't necessarily happen in practice but I hadn't always communicated it as well as I should have to the client.

Paul Carrett then spoke. Paul if anyone made a campaign speech to be the head of our new banking finance and investment taskforce, it was you. Paul's was a very positive speech, highlighting many of the strengths of the actuarial profession within this area. Paul pointed out that whilst improvements could be made to our Finance education, it was actually already of a high standard. He also pointed out, that bancassurance has enabled us to move across into banking and finance. We have actuaries working in life insurance, and the banks realise these people who are advising their life office, do have a lot to add. We have many living examples of the way that we have spread our influence through these life actuaries into banking.

I was very pleased that Barry Rafe said that he managed to struggle through as far as section 1 and that's as far as he got. But that is why an executive summary was provided as I do feel that we lead busy lives and few people have time to read the whole paper. Barry pointed out that we are not growing as quickly as we should be and I agree with that. We are growing, but if you look at the figures we are not growing as fast as we used to. And I also agree it's our whole aim is to build up supply and then let the demand look after itself.

Richard Lyon, who was representative of an actuarial dynasty, then spoke next. And thanks Richard - we need to be challenged. There is a natural tendency in these addresses and these speeches to emphasise the strength of our profession. From his personal perspective he pointed out some of the weaknesses particularly as it applied to him.

One point I will dispute. He said that I was saying that we admit to membership these new actuaries with their different background and then hey presto! the Institute is transformed. I do not really see the process working like that. It is a fact, an undeniable fact that great changes in our practices are made by individuals. There are entrepreneurial actuaries, who in growing their businesses have transformed the profession. And that is the sort of thing I could see happening in banking and finance and other areas. But they couldn't do that if we didn't fertilise the ground, if we didn't make the

opportunities available. And that is the role of the Institute - to make the opportunities available for certain outstanding individuals to take the whole profession forward.

Brent Walker then talked about a number of things. One was about the overload of work of the President of the Society of Actuaries. I think he should seriously talk to his Executive, because I do not think a President should have to work anything like those hours. He also mentioned that if there were a two-year Presidency then the President should write an address in the intervening year.

I must tell a story, which I think, is slightly against myself. After the Melbourne Address one actuary came up to me and said, yes, he thought a two-year term Presidency was a good idea because you would only get a presidential address every two years.

And finally, Fred Rowley, thank you very much for your comments. You point out we have had to look at governance, but now maybe the cycle is turning and we can do more in marketing. I'm very pleased Fred supported a large number of my initiatives, as we're going to have to work together pretty closely over the next year. And Fred reminded us of that we have been a pro-active profession so let's all be pro-active and go and have a drink now.

Thank you.

Paradigms, Research and Recognition of the Actuarial Profession

*R Fitzherbert**

Abstract

This paper is concerned with the role of research within the actuarial profession as a foundation for its future, recognising the desire to become more recognised in the broader financial services industry. To sustain itself, the profession needs to achieve and maintain effective ownership of relevant paradigms in practice areas within the domain of actuarial science. Without this, individuals may be recognised in these fields, but the profession will not.

The concepts of paradigm and exemplar, as enunciated by Thomas Kuhn are important to this discussion, without necessarily endorsing Kuhn's view of the history of science as an appropriate model for the actuarial profession.

There have been many pronouncements about the future of the profession, its role in the community and the importance of research. However the existence of a formal structure for research and other formalities such as a code of conduct do not guarantee the future of the profession. This depends on its paradigms, their soundness, relevance and effective ownership by the profession.

While university based research, the efforts of volunteers and ARCA may contribute towards achieving these ends, the profession may need to take a lead in orienting this research towards the development of its own paradigms. Most of the infrastructure required is already in place; it is the focus and leadership from the profession that needs more thought.

Key Words: Research, Paradigms, Actuarial Profession

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1 Introduction

1.1 This paper is concerned with the role of research in securing the future of the profession and how the existing infrastructure can be modified for this purpose. It seems obvious that, with a declining role in life insurance and defined benefit superannuation, and a stable role in non-life insurance, new professional frontiers will need to be found. This observation does not seem controversial, but the desire to strike out into new fields of endeavour has been present for many years, if not decades.

What may be new is an element of urgency now that the contraction of the role of the profession in life insurance and superannuation has occurred. An additional element of urgency may be the result of the recent scrutiny of the profession in the UK. Also, in pensions at least, a similar contraction of the profession seems imminent in the UK.

Seeking recognition of the profession in other areas has long exercised the collective mind of the profession, as Duval (2001) reflected:

'We have been talking for fifty years about moving into wider fields, yet the main base of the profession is still life insurance and pension funds, indeed it is even more specific than that - it is with profits life insurance and defined benefit pension funds.'

Similar comments were expressed by David Dickson in discussing Graham Rogers' Presidential Address (Rogers, 2004, p73):

'I have lived in Australia for almost eleven years now and throughout this period many people have talked about wider fields. From my perspective, there has been little real progress in this area, but I am always intrigued by people's idea as to how the profession might expand its sphere of activity.'

Despite all this discussion of wider fields over many years, little progress seems to have been made by the profession, except in general insurance and, more recently, in health. Despite this lack of progress and lack of recognition of the profession, significant success has been achieved by individuals. The Banking, Finance & Investments (BFI) Taskforce (2005) reported to the Biennial Convention:

'... it is clear that actuaries, as a group, have no present status in [the broad financial services industry].'

Nevertheless:

'...many actuaries are enormously successful in many areas of the finance industry...because of their personal attributes.'

In other words, it is individuals (with their actuarial training) who have been successful in BFI fields applying their knowledge and abilities, but the recognition has been accorded to the individual, rather than the profession.

1.2 As the BFI taskforce notes, the underlying cause of this lack of recognition may be because *'...the role of the actuarial profession [in BFI] is ill-defined...'* Also, this may create a serious long-term threat to the revenue base of the Institute as:

'...these actuaries see little benefit in professional activities, or even the qualification itself...a key to increased strength [within the profession] in the BFI sector is to find compelling reasons to remain engaged with the profession.'

This seems to be a recurring theme. Rogers (2004) commented on the same problem in his Presidential Address:

'Many of our graduates from the university actuarial schools are attracted to work in the finance and investment areas although, unfortunately, some of them fail to see any benefit in continuing their actuarial connections.'

- 1.3 These quotations lead to the following list of questions, which have long presented a puzzle to the profession:
- a) why was the actuarial profession so important in life insurance and defined benefit superannuation, in management as well as the technical side?
 - b) why has this prominence declined?
 - c) why has the profession been successful in gaining recognition in non-life insurance and health?
 - d) why has the profession not been successful in BFI fields, despite the success of individual actuaries in these fields?
 - e) why do BFI practitioners see little benefit in maintaining their links with the profession?

Part of the answer to this puzzle, and perhaps an answer to the future may lie in the idea of a paradigm as enunciated by Thomas Kuhn (1996). As a scientific community, the actuarial profession is defined by its paradigms which *[consist] of the discoveries, the general theoretical laws and assumptions, and techniques for their application that are accepted by a scientific community*. It is argued here that the influence and recognition of the profession depends on its paradigms. The relevance and acceptance of these paradigms is necessary, but not sufficient, for recognition of the profession in a particular field.

- 1.4 It is easy to say that the role of the profession in life insurance and superannuation has declined because of the decline in with-profits and defined benefits. However, this decline in actuarial influence would not have happened if the alternatives which took the place of with-profits life insurance and defined benefits superannuation required technical expertise that was recognised as actuarial.

For the purpose of focusing the profession's research effort, it is helpful to recognise these changes as a phenomenon that is common in the history of science. In Kuhnian terms the success of the profession in the cases cited above was the direct result of the

actuarial profession being the recognised 'owner' of relevant paradigms in with-profits life insurance (the net premium system), defined benefit superannuation, pensions in the UK (the actuarial balance sheet), non-life insurance (run-off triangles) and health.

The profession's prominence in life insurance and defined benefits has declined as these paradigms have been replaced by alternatives (market valuation of assets in UK pension funds), or ceased to be relevant (demutualisation, the rise of unit-linked life insurance and the switch to defined contribution superannuation).

The reason success in BFI or 'wider fields' tends to be accorded to individuals and not the profession is that the actuarial profession is not the recognised 'owner' of any important and relevant paradigms in these fields.

The actuarial education curriculum may include mean-variance portfolio theory, derivative pricing (including the Black Scholes formula) and other aspects of financial economics, but 'effective ownership' of these paradigms is generally accorded to the academic finance community.

Consequently there is no recognition of the profession where these paradigms are important even though many of its members are recognised individually and even though their knowledge may have been gained through the actuarial education system.

- 1.5 One example of how recognition of the profession, rather than the individual, depends on recognised ownership of relevant paradigms occurred in the measurement of investment performance where a minor actuarial paradigm - the time weighted rate of return - was recognised by superannuation trustees. Martin Stevenson recalled this success in the discussion of Andrew Gale's Presidential Address (Gale, 2005, p114).

'...investment performance surveys...were pioneered by firms of consulting actuaries. Prior to that, investment managers produced their own performance surveys, which all had one

thing in common - the investment manager that produced the survey always came out on top. This was obviously financially significant. The destination of hundreds of millions (now billions) of dollars was determined by the results of these surveys. Actuarial expertise was paramount because of the need to collect data, to work through the techniques and come up with common standards. Integrity was absolutely important so that people were confident that the results were not done with any bias.'

Compared to (say) option pricing, the mathematics of performance measurement is trivial and the actuarial profession was not unique in having members with the level of mathematical ability required to perform these calculations. However, by being in the right place at the right time, the profession became recognised, at least temporarily, because firms who described themselves as actuaries produced a paradigm that became the industry standard.

- 1.6 Unfortunately a blind faith in performance numbers, with questionable statistical significance (see Campbell, 1995 and Fitzherbert, 1988) may have caused this initial success to turn sour whether reliance on performance numbers was actual or perceived. While the calculation of performance numbers by actuaries was respected, there is no accepted theoretical basis for the use of such numbers as a basis for decision making. While the 'science' behind calculating performance numbers may have been associated with actuaries, the science of interpreting these numbers, if there was any, was outside the scope of the profession. In commenting on the investment education needs of the profession at the time, it was noted (Fitzherbert, 1993):

'...judging from the services on offer...many [actuaries] without specialist knowledge of investment are confidently offering advice on the selection of fund managers at a relatively young age. By comparison, [non-actuaries] who have worked all their life in the investment world and who have graduated [from academic study through practical experience to a supervisory position] would probably not be

offering such consulting services much before the end of their careers - if at all.'

Individuals who had such interpretive skills (or who claimed to have them) came from varied backgrounds. The business of performance measurement became part of asset consulting and the distinctive activity identified with the profession became lost as part of a wider consulting activity. As the profession did not own the 'science' associated with this wider activity, brand recognition shifted from the profession to the individuals and their firms.

Given the relatively simple nature of investment performance calculations, it became relatively easy for non-actuaries to take over all parts of the business, including the calculation of investment performance numbers. Unfortunately the profession is now remembered for its participation in asset consulting, rather than just calculation of performance numbers. The BFI Taskforce (2005) noted:

'[In the investment industry, the] actuarial profession [is] challenged by [a] legacy of contempt [by] money managers for asset consultants ..'

Even though the history of the profession's involvement in investment performance measurement has not been wholly satisfactory, this does not detract from the fact that ownership of a relevant paradigm created the initial involvement and, as far as measurement itself is concerned, these figures were always respected. The problems identified by the BFI Taskforce were caused by factors that were not related to the calculation of investment performance.

1.7 Given Kuhn's definition of a paradigm '*the discoveries, the general theoretical laws and assumptions, and techniques for their application that are accepted by a scientific community*', mean-variance portfolio theory would probably qualify as a paradigm accepted by the actuarial profession, even if such acceptance would not be universal. Moreover it is part of the educational curriculum at

both Part I and Part II level. (See Bellis et al, 2003, Chapter 13.) The mean-variance framework clearly falls within the domain of actuarial science, it is a compulsory part of the curriculum, and yet the profession is not normally associated with this approach to investment.

So why are some ideas and theories regarded by outsiders as 'actuarial' while others are not - even though both fall within the domain of actuarial science, as defined by the Royal Charter of the UK Institute?

One obvious answer is that the actuarial profession had little to do with the initial development of mean-variance theory, while it was deeply involved with the theory of with-profits life insurance, defined benefit superannuation, non-life insurance and, to a lesser extent, investment performance measurement. In his UK Presidential Address, Thornton (1999, p35) recalled:

'At one time actuaries were recognised as the investment experts and until about 30 years ago we were the only professional body that provided a qualification in investment. We woke up with a start only a few years ago to realise that suddenly much, if not most, of the difficult investment work on derivatives and pricing options was actually being done by financial economists or financial mathematicians and not by actuaries.'

This awakening may have confused the differences between investment in securities and the use of derivatives as money management tools. Even so, mean-variance portfolio theory (which was part of this development) and derivative pricing clearly fall within the profession's definition of actuarial science (Institute of Actuaries, 2004, p1):

'The consideration of all monetary questions involving separately or in combination the Mathematical doctrine of probabilities and the principles of interest.'

Recognised effective 'ownership' of a paradigm therefore depends on the involvement of the profession in its development. The fact that a paradigm falls within the domain of actuarial science and/or that it is a compulsory part of the educational curriculum is not sufficient for the profession to be the recognised owner of a paradigm. Also, as the emergence of 'asset consultants' has demonstrated, membership of a professional body with codes of conduct etc is not necessarily a major advantage when the dominant paradigm is not normally associated with the profession.

- 1.8 There may be some value in briefly reflecting on the continued success of the accounting profession. Its underlying fundamental paradigm is double-entry book keeping, which forms the basis of almost all financial reports, internal or external, prepared by almost all businesses of any significance. The double entry paradigm defines the profession, its members all know how to prepare financial statements based on double-entry systems and, given their intricate knowledge of the preparation of financial statements, accountants are well placed to answer questions when interpretation is required.

The double-entry system has survived many potential challenges such as computerisation. Difficulties caused by inflation and the need to adjust assets to market value have been dealt with by modifications to the historical cost double entry system, not through radical changes to double-entry bookkeeping. Effective ownership by the accounting profession of the means of preparing standard financial statements seems well accepted.

- 1.9 To return to some of the problems identified by the BFI Taskforce, the profession's role in the broader financial services sector, including investments, is *'ill-defined'*.

It is suggested here that this lack of definition and lack of recognition of the profession is because the actuarial profession has not achieved effective ownership of any important paradigms in the broader financial services sector.

In their report, the BFI Taskforce mentioned the need for an education program that equipped actuaries better for the broader financial services industry, noting the need for a substantially higher level of mathematics. The fact that many problems in this sector fall within the domain of actuarial science, as defined by the UK Charter, and that many components are a compulsory part of the educational curriculum, is not enough to overcome the lack of ownership of relevant paradigms.

It follows from this proposition that actuarial training may assist young graduates find employment in the broader financial services sector. Actuarial training may even be seen as more rigorous than other alternatives and give actuarial graduates an advantage when seeking employment. Improving the education system to assist more graduates move into non-traditional areas may make an actuarial degree even more attractive, but recognition of their skills and knowledge will be accorded to the individual rather than the profession until such time as effective ownership of relevant paradigms is achieved.

1.10 The value of what follows depends, to some extent, on acceptance of the proposition that effective ownership of relevant paradigms is a necessary condition for recognition of the actuarial profession in a practice area. This proposition is inferred from examples discussed above and, like any hypothesis drawn by induction, is no more than a hypothesis. Developing relevant paradigms in wider fields will require research and, as the profession's future is at stake, perhaps it may need to be more pro-active and not wait for volunteers to emerge from wider fields where many potential volunteers seem to have lost interest in the profession.

Section 2 gives more background on Kuhn's ideas of paradigms and exemplars - standard problems which entrench paradigms in the minds of trainees. The decline of the profession in life insurance and defined benefits has many of the features of a scientific revolution and the Kuhnian framework seems to be relevant to the actuarial profession. This framework also suggests the existence of a crisis in

the paradigm that dominates the BFI area where the profession apparently seeks greater recognition. This presents the profession with a significant opportunity.

Section 3 argues that greater commitment to research is essential if this opportunity is to be seized. It is also suggested that significant changes to the structure of the profession will be required if it wishes actuarial qualifications to achieve the recognition in the broader financial services sector that will sustain the actuarial profession in this field. These changes are required to increase the relevant competency of actuaries, as well as increasing the pool of talent required to sustain the type of practitioner based research that has been so important in traditional fields.

2 Paradigms, exemplars and actuarial method

2.1 While there have been many discussions of the role and nature of professions, there is a scientific nature to the actuarial profession. This is often overlooked even though the existence of an underlying science, as a significant aspect of a profession, is not unique to actuaries.

As an invited non-actuary to the 1980 International Congress, Jewell (1980) pointed out that the prepared papers gave ample evidence of the actuarial profession as a scientific community. Similar comments were expressed by Thornton (1999, p34) in his comments, although Thornton used the term '*Learned Society*' rather than scientific community. He pointed out that this was an important aspect of the original concept of the UK Institute:

'... Right from the start the Institute of Actuaries set out to be a body that encouraged its members to advance the state of what we would now call Actuarial Science.

Most of us would still like to think we are a learned society - and this is evidenced by the papers which are written and discussed, the research working parties and the library facilities as well as our busy schedule of conferences and seminars. '

It is this aspect of the actuarial profession (as a scientific community) for which the ideas of Kuhn (1996) seem most relevant. (Examples to illustrate Kuhn's ideas have been taken from the broader finance sector, as this is relevant to the discussion which follows.)

2.2 According to Kuhn, all scientific communities have their paradigms. To repeat, these are:

'... the discoveries, the general theoretical laws and assumptions, and techniques for their application that are accepted by a scientific community'

In new fields, there is generally a period of *'pre-science'* where various competing ideas and theories are debated. Consider, for example, investment theory until the 1960s; there were chartists, random walkers and fundamental analysts with very little agreement between the three camps. This was the *'pre-science'* stage of investment thought.

The next step is when a paradigm emerges. In the case of investment this paradigm, which is sometimes called *'modern finance'*, emerged in the 1960s with the theoretical work of Markowitz, Sharpe and others. (See Haugen, 1995.) This was supported by earlier research on random walks and the performance of fund managers. The *'modern finance'* paradigm therefore includes mean-variance portfolio theory, the efficient market hypothesis, the equity risk premium, the capital asset pricing model and the empirical studies supporting these ideas.

Once a paradigm is adopted, people in the field conduct *'normal science'* which fleshes out the details, mops up unresolved puzzles and fine tunes the paradigm. Although some actuaries have been involved in *'modern finance'* and many of the ideas involve a combination of probability theory and compound interest, the actuarial profession is not recognised as an important player. This was acknowledged by Thornton (1999): *'It is the financial economists, the market economists, the financial mathematicians who*

are writing the learned papers which I would like actuaries to be writing.'

2.3

In the conduct of '*normal science*', puzzles will emerge and solutions will be sought. In actuarial work, puzzles can also arise as a result of the change in the environment in which otherwise satisfactory paradigms are no longer applicable. For example in life insurance, investment in shares led to numerous problems of equity and product design. Traditional with-profits policies and the net-premium valuation were challenged and unit-linking evolved to circumvent some of these problems. More recently, demutualisation has led to a need for realistic profit reporting, for which margin-on-services seems to provide a satisfactory solution. This seems to have followed the Kuhnian model as Jewell (1980) might have forecast:

'... because this scientific revolution causes a dramatic shift in values and concepts, its further growth and influence cannot be predicted, but only discussed, tested, and applied by the reformed community which must adapt to survive.'

Although the experience of the profession in life insurance seems to have followed the Kuhnian model, there was never any guarantee that the replacement paradigm would involve the profession. This continued involvement had to be earned - in this case by developing the replacement paradigm. In life insurance, the actuarial paradigm seems to have been successfully patched to meet these new developments even though the reversionary bonus/net-premium valuation has lost its central role. Perhaps this has also been associated with a relative decline in members of the actuarial profession in senior management roles in the industry.

With defined benefit superannuation, similar puzzles have resisted solution for various reasons. Equities seem to be regarded as the most suitable long-term investment for such schemes, yet their volatility makes them quite unsuitable when market prices are regarded as the most suitable method of valuing these assets as part of a financial assessment. With the predominance of lump sum

benefits the puzzles may have been different in Australia to countries with mainly pension benefits.

Nevertheless, the more or less complete acceptance of market valuation of assets, combined with the valuation of liabilities at a 'risk-free' discount rate seems destined to replace 'old' actuarial thinking where it remains. As those advocating the 'new' approach seem younger than those advocating the 'old' approach, the remaining dissent will eventually disappear, as traditionally trained actuaries retire. Nevertheless, this will not prevent challenges such as those of Carne (2004). Chalmers (1999, p117) wryly commented:

'If the revolution is to be successful, this shift [in paradigm allegiance] will spread so as to include the majority of the scientific community, leaving only a few dissenters. These will be excluded from the new scientific community and will perhaps take refuge in a philosophy department. In any case, they will eventually die.'

2.4 In his model of the emergence and acceptance of scientific theories, Kuhn (1996, p187) attributes a significant role to exemplars, described as:

'... concrete problem-solutions that students encounter from the start of their scientific education, whether...on examinations, or at the ends of chapters of science texts. To these shared examples should however, be added at least some of the technical problem-solutions found in the periodical literature that scientists encounter during their post-educational research careers that show them by example how their job is to be done.'

Actuaries will no doubt recall the coin tossing examples in learning probability. Such exercises involving coin tossing are quite harmless and do little more than serve their role in explaining probability theory because they have very little professional commercial application - except for the small number of actuaries who might advise casinos on the design of a 'two-up' game. However, the

introduction of real world examples into examinations and practice exercises can have a significant influence on trainees' attitudes. Consider the following example (Institute and Faculty of Actuaries, Subject 109, Specimen Examination 1999):

'It has often been suggested that the movement of share prices can best be described as a 'random walk' analogous to 'Brownian motion' Explain clearly what is meant by this suggestion...'

As exemplars such standard problems help establish, in the minds of trainees, the truth of the underlying assumptions. There is rarely any debate. Marks are generally awarded for correct answers in mathematically based examinations - not for analysing the assumptions. (In this particular case, there was some opportunity for demonstrating a depth of understanding of the underlying assumptions, but this is frequently not the case.) This form of indoctrination is, perhaps, unintentional but this does not prevent such exemplars influencing students' prejudices.

The idea that exemplars indoctrinate students into accepting the validity of the underlying assumptions is open to legitimate disagreement. In support of the argument Pemberton (1999, p163), in his paper of actuarial methodology observed:

'Black-Scholes state that 'the option value as a function of the stock price is independent of the expected return on the stock'. ... There is widespread evidence within the literature that the Black-Scholes proof has given rise to this precise universal claim.'

Consider the following exchange that then took place in the discussion relating to the value of teaching the proof of the Black-Scholes formula:

PP Boyle (p185):

'In the case of important models, it is only through a careful analysis of the proof that we can see which assumptions are

critical, and which ones are less critical, for a particular model.'

JM Pemberton (p195):

'The sort of point that might support the teaching of the proof [of Black-Scholes] ... is that it helps make apparent the relationship between the valuation formula and the no arbitrage principle in a way which allows us to choose a better valuation model or better valuation parameters. This may be so, but the literature, as yet, appears not to provide any examples of how this actually works.'

[Perhaps all sides of this dispute would be reconciled by a new compulsory examination at Part II level dealing with the underlying philosophy and logic of the material covered in Part I. There would be no new material, just a separate examination, where a poor understanding of underlying assumptions cannot be offset by an ability to reproduce mathematical proofs.]

2.5 Although it can never be proven, these illustrations suggest that, given the scientific base of the actuarial profession, Kuhn's model may be relevant when contemplating its future and deciding how to commit its limited research resources.

This discussion, drawing on Kuhn's ideas of paradigms and exemplars needs to be separated from the separate but related issue of identifying the methodology of actuarial science, or the methods of practicing actuaries.

Pemberton (1999, p157) argued that there is a distinctive methodology to actuarial science:

'... whilst actuarial science uses a range of model-types, its dominant methodological style is the use of empirically derived low-level generalisations within extended fact based models. Neo-classical economics, especially in its present mathematical guise, employs the [hypothetico-deductive]

method to derive claims about the world from assumptions - its models are essentially assumption-based.'

The hypothetico-deductive method involves specifying a hypothesis and then deducing testable outcomes. If the outcomes do not fail a test, then we make inferences about the original hypothesis. If a number of tests fail to establish that an observation is inconsistent with the original hypotheses, often using statistical significance, then the original hypothesis becomes accepted. An example of this method was evident in achieving acceptance of the semi-strong form of the efficient market hypothesis:

- a) suppose that markets are (semi-strong form) efficient,
- b) if this is true, the typical fund manager will do no better than market indices,
- c) we observe that the typical fund manager does no better than market benchmarks,
- d) we add this conclusion to other evidence that infers the correctness of the original hypothesis that markets are efficient.

Interestingly, this is an example of the idea of falsificationism advocated by Karl Popper (1972, p37) as a basis for distinguishing between science and non-science. A scientific hypothesis - in this case semi-strong form market efficiency - should generate predictions which are falsifiable.

'... the criterion of the scientific status of a theory is its falsifiability..'

On this criterion, *modern portfolio theory* appears to qualify as a science. However, in advancing this criterion, Popper also said (p36):

'It is easy to obtain confirmations, or verifications, for nearly every theory - if we look for confirmations. .. Confirmations should count only if they are the result of risky predictions; that is to say, if, unenlightened by the theory in question, we

should have expected an event which was incompatible with the theory - an event which would have refuted the theory.'

It could be claimed that standard market indices and benchmarks are constructed to represent the results of the 'average' investor and we would therefore expect the typical fund manager to produce average results whether markets were efficient or not. As a confirmation of market efficiency, mediocre fund manager performance is not the result of a 'risky' prediction. While compliance with Popper's criterion of falsifiability could therefore be debated, there seems little doubt about the existence of a paradigm in 'modern finance'.

- 2.6 Pemberton (1999) was at pains to mention the importance of causation in models used by actuaries, which is not really part of the hypothetico-deductive approach.

The claim that actuarial methodology is quite different to mathematical economics was disputed in the discussion of Pemberton's paper. Nevertheless, there is something quite different between the way the law of large numbers underpins the traditional actuarial concept of expected present values and the importance of no-arbitrage assumptions in financial economics. The validity of the no-arbitrage assumption in many areas where it has been adopted is widely challenged - see for example Shleifer (2000). However, and unfortunately for the actuarial concept of expected present values, financial economics seems to have assumed the role of dominant paradigm in finance, as Huber and Verrall (1999, p392) acknowledge:

'... notwithstanding its flaws, financial economics is currently the orthodox theoretical framework, and it has been extensively researched and tested.'

As a result of the dominance of the financial economics paradigm, its methods are also being imported into the actuarial profession, as exemplars, if not by outright adoption of no-arbitrage assumptions.

This is not intended to be an endorsement of the principles of financial economics, nor of the widespread use of the idea of arbitrage free markets. These comments on the status of the paradigms of *'modern finance'* are intended to point out that the 'invasion' of the actuarial profession by financial economics is much more subtle and pervasive than is generally recognised.

As well as its influence on methods used to value assets and liabilities, financial economics may also displace some of the essential underlying ideas of actuarial science, such as expected present values for valuing non-life insurance liabilities as well. For example, the securitisation of insurance liabilities relies on the existence of a market in synthetic instruments against which underwriters can price their risks using no-arbitrage principles.

2.7 While the rise in influence of financial economics is welcomed by some sections of the profession and resented by others, it should perhaps be noted that financial economics is itself exhibiting some of the features of a paradigm in crisis. For some considerable time, a number of puzzles in finance have resisted satisfactory resolution within the *'modern finance'* paradigm.

The first of these unresolved puzzles is the size of the equity premium. Mehra and Prescott (1985) argued that it was too large to be explained by rational economic behaviour. They challenged the causal link between risk and the equity premium and some finance academics seem concerned about its future level. If the cause is risk aversion by portfolio investors, and there is no major change in this behaviour why should we accept such a major change of heart as that attributed to Ritter (2002)?

'Many textbooks encourage students to use the historical arithmetic average equity risk premium of 9% [per annum] for computing the cost of equity capital. ... The numbers I am about to compute using forward looking estimates suggest that 1% is a more defensible number.'

A second puzzle is the periodic appearance of speculative bubbles. Historians such as Galbraith (1975) and Kindleberger (2000) argue that, while they cannot predict the extent or length of the bubble, they conform to a recognised pattern and will eventually collapse. On the other hand, in Bellis et al (2001), Ashe argues that such impending collapses can only be recognised in hindsight.

A third puzzle seems to be continued contradictions to market efficiency. Consider, for example, the following conclusions of Beechey et al (2000) in a research paper published by the Reserve Bank of Australia.

'Both academic research and asset market experience, however, suggest that [the efficient market hypothesis] does not explain some important and worrying features of asset price behaviour. The efficient market hypothesis is almost certainly the right place to start when thinking about asset price formation.'

It was difficult to see how the final sentence was justified by the previous one, which summarised the findings of their paper. In a similar vein, here is a quotation from an article in *The Actuary* written by Hiten Nandha (2003) from the UK Government Actuary's Department:

'... there is evidence to suggest that price-earnings ratios, dividend yields and book value as a ratio of market value all have some predictive power. Is EMH a (good) half-truth? Probably.'

2.8

These last two quotations, from Beechey et al and Nandha illustrate yet another important aspect of Kuhn's model of the paradigm cycle. As Kuhn observed, the failure to treat an anomaly as a counter example is a common feature in scientific communities where there is an incumbent paradigm.

When unsolved puzzles mount to the point that a paradigm is in crisis scientific communities tend to ignore the contradictory

evidence and continue to operate within the incumbent paradigm until an alternative is available. To quote Kuhn (p77):

'[Let us first note] what scientists never do when confronted by even severe and prolonged anomalies. Though they may begin to lose faith and then to consider alternatives, they do not renounce the paradigm that has led them into crisis. They do not, that is, treat anomalies as counter examples, though in the vocabulary of philosophy of science that is what they are. Once it has achieved the status of a paradigm, a scientific theory is declared invalid only if an alternative candidate is available to take its place.'

- 2.9 This is not the first time that some of the science of *modern finance* has been diagnosed in an actuarial paper as exhibiting some of the symptoms of a 'paradigm' in crisis. In replying to the discussion of his paper, Pemberton (1999, p189) said:

' [it was suggested] that actuarial science might be giving way to a new paradigm, but unfortunately, this 'new' paradigm, mathematical or financial economics, is principally based on positivism, and it was positivism that collapsed in the 1960s. In Kuhnian terms, mathematical economics is now the old paradigm. Recent developments point to its ending and its replacement with a new, more empirically-based paradigm within financial modelling, which is more consistent with actuarial approaches.'

This was written several years ago. The world may not wait indefinitely for the actuarial profession to supply the alternative.

- 2.10 The fact that a high proportion of actuarial graduates are seeking careers in wider fields and yet many of them see little benefit in maintaining their actuarial connections suggests two things. First, some 'wider fields' employers see university actuarial programs as a source of raw talent, but do not see any benefit from encouraging continued involvement with the profession. Second, many actuarial graduates do not see much value in their membership either.

Both of these attitudes might alter if important paradigms in areas such as banking, investments and finance were seen as actuarial. If the profession wishes to be recognised in these fields, then the profession itself needs to be seen to be conducting relevant research. Perhaps this activity, by itself, may give both actuarial graduates and their employers more incentives to continue their actuarial connections. If the profession were to develop paradigms that were relevant, then its claim for recognition in these fields would be much stronger.

2.11 The purpose of this section was to argue, from an interpretation of the historical record, that:

- a) the Kuhnian model is relevant to the actuarial profession and that the influence and recognition of the profession have risen and declined with the acceptance and relevance of its paradigms,
- b) there is a dominant paradigm in finance which has displaced (or is displacing) actuarial methodology in traditional fields. This paradigm is widely accepted in the broader financial services sector, in which the profession wishes to become recognised, and
- c) the paradigm of '*modern finance*' is itself in a state of crisis. If this diagnosis is correct then the profession needs to do what it can to generate alternative paradigms (or possibly rejuvenate old ones), at least within practice areas where it seeks recognition as a profession.

2.12 These observations on the incumbent paradigm in '*modern finance*' naturally lead to the consideration of joint ownership of paradigms with other groups and whether the profession needs to 'own' the underlying science or just its applications. In the history of probability theory (see for example Maistrov, 1974), there is scarce mention of actuaries and yet the profession is recognised for its involvement with applications in life insurance, non-life insurance, pension schemes and population mortality tables. One major theoretical development (Kolmogorov's axioms) has largely bypassed the profession while some new ideas (eg. generalised linear

models in statistics) have been readily incorporated into the actuarial tool-kit.

The history of the interface between the profession and probability theory would suggest that what really matters is developing the applications rather than the underlying ‘pure’ science of a paradigm. On the other hand, the history of (say) mean-variance portfolio theory leads to the opposite conclusion. The profession was not involved in developing the underlying ‘science’ and, when it came to developing applications (eg.asset liability modelling, risk-adjusted performance measurement), the profession had many able competitors.

It may therefore be risky to assume that the profession can let others develop the underlying science and then secure its commercial future by the subsequent development of applications. Other theoretical developments suggest that where there is a substantial change in the underlying science (eg.the development of stochastic calculus) or where new ideas emerge to challenge actuarial foundations (the ‘no arbitrage’ principle compared to expected present values), the actuarial profession may be pushed aside.

These examples show that, at the very least, the profession needs to develop application paradigms through its research program, recognising that this may not be adequate to secure recognition of the profession. Where both the underlying theory and applications have been developed by others, the profession may need to look for an alternative underlying theory as well as new applications.

3 Suggestions

The profession needs some form of permanent research infrastructure

- 3.1 The preceding sections have argued that if the profession wishes to be recognised in the broader financial services sector, then it needs

to be deeply involved in relevant research. There is an opportunity, right now, to develop an alternative paradigm to the underlying science of *'modern finance'*.

From time to time the profession has discussed papers brought forward by volunteers, largely of their own initiative. However, the history of the emergence of financial economics also carries some salutary lessons for the profession. It took 30 years for the profession to wake up. The profession needs to have a permanent body (call it a Research Committee for the time being). Its first role is to monitor developments in related fields and actuarial journals; to do so it needs sufficient resources to investigate and report on matters that should be of interest to the profession.

As far as *modern finance* is concerned, the profession needs to consider its research options. Should it seek alternative paradigms for those in crisis? Are there any new applications that can be developed? Or should it let someone else do the work, recognising that if a replacement paradigm is found without actuarial involvement, the profession will then have no valid objection to being sidelined in any professional work that follows.

At present, most of the research activity within the profession seems to be generated by volunteers and university based academics following up ideas/puzzles that confront them in their professional activities or that interest them. It would be quite inappropriate to attempt to dictate the direction of this largely voluntary research. However, as a method of conducting the research that is needed by the profession, this seems somewhat haphazard. A second role for the research committee is therefore to identify areas of research which should be of interest to the profession. Simply writing out the problem and making this specification available may be sufficient to generate research interest from volunteers. Sometimes there will be individuals who can be approached to prepare papers on these subjects, at other times working parties can be established

In fulfilling this second role of identifying research ideas, a research committee should learn from experience and, with time, may develop some expertise in looking after the long-term research interests of the profession. Under the existing system, research output tends to depend on the interests of volunteers and academics. As the profession has a vested interest in the research that is done, it may need to fill some gaps between what is being done voluntarily and what needs to be done.

If the Actuarial Research Centre of Australia (ARCA) becomes active, the responsibilities of the research committee may need to be modified, but such a committee is needed as an important part of the structure of the profession, with or without ARCA.

The profession needs to do everything it can (within reason) to encourage research

3.2 The effort required to research and write a paper suitable for publication in an actuarial journal is considerable - often requiring several hundred hours. The motivation for this effort is difficult to ascertain, however it might be reasonable to speculate that interest in the topic and recognition of those responsible are important factors. Holding meetings to discuss papers, particularly if they spark an informed debate, could be an important motivation for prospective authors, as could the recognition that comes from subsequent publication.

However, given the one-sided resources nature of research activity (most of the effort is expended by the author rather than the profession), the additional recognition of pre-printing discussion papers should perhaps be re-considered - even if printing is limited in number. (If electronic circulation is considered adequate, then why did this not also apply to the President's Address? This is not intended to suggest that the practice of circulating pre-printed copies of the President's Address should have been terminated, but to point out that such recognition may be important to authors of research papers as well.) A second issue, of some importance, is the value of

printed copies of research papers in promoting the profession's interest as the 'owner' of ideas.

It might be worth investigating what motivates people to conduct research. If recognition is important, then minor cost savings seem irrelevant. Also, the existence of a *Research Committee* with a list of ideas might encourage some enthusiastic members to become involved. A second issue, which might have a straightforward solution, is shortening the delays that now occur between submission of research papers, completion of the review process and subsequent publication. Perhaps the profession needs to offer greater management support and recognition of the volunteers involved in this process. To some extent, Australian Actuarial Journal is competing internationally for the right to publish high quality research.

The educational programs, research activity and professional status of 'finance actuaries' need to be examined

3.3 If the profession wishes to be taken seriously in the broader financial services sector, then it may need to do three things which are related:

- a) It needs to develop a credible professional qualification. In traditional fields, the profession is recognised for its mathematical strength, but in 'finance' the level of mathematics acquired in actuarial programs is inadequate to achieve the level of recognition (for mathematical knowledge) that the profession enjoys in traditional fields.

This is not to deny that many individuals within the profession have these mathematical skills, just that they are not an automatic part of undergraduate programs (ie.Part I), as the BFI Taskforce (2005) noted:

'[The profession needs to] deepen the technical content of the Finance module to bring actuaries to the level of proficiency of other practitioners This implies that students to be Finance actuaries should ensure they complete a high level of

mathematics in their tertiary education - certainly higher than the first year [university] maths in an actuarial degree.'

To be credible, finance specialists require a level of mathematics that would probably include advanced knowledge in mathematical analysis, linear algebra, stochastic calculus, stochastic processes and possibly measure theory. For such individuals, life contingencies, graduation and the Control Cycle serve little purpose and could possibly be substituted.

The profession currently insists on the traditional fields being covered in educational programs by those intending to specialise in finance. It could be claimed that these topics are already included in the Part I syllabus. The argument here is about the depth to which they are covered and the proficiency expected of actuaries, not just the scope of the syllabus. For the profession to be credible, its practitioners in BFI fields need a level of expertise that is at least as good as all of its rivals, requiring a deep understanding of these topics, well in excess of the current requirements.

Perhaps the time has come to recognise that the educational needs of those wishing to specialise in finance and/or investment and those who are more interested in traditional areas diverge at a relatively early stage in the educational system. Unfortunately the needs of those pursuing the traditional route and those intending to specialise in finance diverge midway through Part I. Intending finance specialists need room in their undergraduate programs for additional mathematics. Potential actuaries have to make a three-way choice between the traditional route, extending their time at university to undertake additional mathematics or, if their sole interest is in mathematical finance, concentrating on the mathematics and not bothering with the profession.

If the profession wishes to attract and retain potential actuaries intending to specialise in finance, it may need to recognise that it is imposing conditions on potential finance specialists (including Part II) that are not really relevant. These requirements make it

difficult for finance specialists to acquire the mathematics they need as well as covering traditional areas without undertaking an extended undergraduate program or completing Part I after graduation.

- b) The profession needs to facilitate, within its finance specialists, the same research culture that existed in traditional fields. This research activity needs to be conducted within the infrastructure of the profession.

It has already been noted how research activity is essential for sustaining the profession in any field in which it operates. Simply creating a finance specialist designation will not generate recognition of the profession in the broader financial services sector because it has no legitimate claim at present to the underlying 'science' - ie.the dominant *modern finance* paradigm. Although there have been some papers on applications such as options pricing and investment modelling, the profession has largely failed to achieve recognition as a profession. While this suggests that past levels of research activity have been inadequate, we should note that much of the necessary infrastructure - Australian Actuarial Journal, Horizons meetings, forums, conventions etc - already exists.

As far as the broader financial services sector is concerned, the BFI taskforce has identified the need to include relevant material in the educational curriculum and create a credible professional qualification. The history of involvement with other fields suggests that, unless the *profession* also develops an active research profile and becomes recognised for its involvement in the underlying science, an educational program and professional designation will not suffice. If people who happen to be actuaries pursue their research interests in communities that are not recognised as actuarial, there is a danger that the profession will not be accorded any recognition in relation to any ideas or paradigms that emerge.

- c) If finance specialists within the profession are to be known as actuaries, then their professional training needs to continue to a

level, in finance, that is equivalent to the fellowship in traditional fields.

From time to time there have been suggestions that the AIAA designation can be used for various purposes, but this seems inadequate recognition. If the profession wishes to be recognised in 'finance', then it may need to offer its practitioners an appropriate level of recognition - which could involve full voting membership. If full voting membership is not offered when a level of competency equivalent to the traditional fellowship has been achieved, finance specialists may not be attracted to the profession. Given the legal recognition of the fellowship in life insurance, etc, a new form of full membership may need to be created.

The profession therefore needs to consider a form of professional accreditation that is recognised in finance as comparable to the fellowship in traditional fields - but is not recognised by legislation in traditional fields. (Accredited Finance Actuary - AFA?)

The profession needs to review its methodology

- 3.4 There is a clear choice for the profession of recognising greater mathematical achievements in lieu of knowledge of life insurance etc. While advocating the need for greater mathematical content within an educational curriculum for the section of the profession that wishes to specialise in finance, it might be wise to also insist on programs that emphasise that, like fire, mathematics is a faithful servant but can be a poor ruler. Here is a quotation from a recently published book on mathematical finance (Capinski and Zastawniak, 2003):

'Our task is to build a mathematical model of a market of financial securities. A crucial first stage is concerned with the properties of the mathematical objects involved. This is done below by specifying a number of assumptions, the purpose of which is to find a compromise between the complexity of the real world and the limitations and simplifications of a

mathematical model, imposed in order to make it tractable. The assumptions reflect our current position on this compromise and will be modified in the future.'

(One of these assumptions was the no-arbitrage principle.)

This example illustrates a second choice facing the profession. This concerns its methodology. As Pemberton (1999) pointed out, the methods of actuarial science are quite different from those of financial economics. If the profession wishes to become relevant in finance, then it will need to adapt its methodology to these wider fields. Otherwise, actuaries working in wider fields may simply adopt the methods of financial economics, allow others to determine where to draw the line between *'the complexity of the real world and ... the simplifications of a mathematical model'* and abandon actuarial methodology.

Some members of the profession may even advocate the abandonment of actuarial methodology in favour of methods based on other ideas. It would be most unfortunate for the profession if the abandoned actuarial methodology was subsequently shown to be just as valid as its replacement. To some extent, this is what Carne (2004) now argues in relation to pensions in the UK.

We have already seen how the demise of the reversionary bonus system has been associated with a shift to a more limited role for the profession in life insurance as one of its paradigms lost relevance. Those who advocate the replacement of actuarial methodology with principles derived from financial economics may need to acknowledge that they may be advocating the replacement of an actuarial paradigm with a non-actuarial one, which has long-term implications for the recognition of the profession. There is also the danger that if the profession abandons its traditional methodology in favour of something else, non-actuaries may subsequently 'discover' actuarial methodology and take it over as their own. As Pemberton (1999) pointed out, this may already be happening in option pricing.

Can defined benefit pensions be resuscitated?

3.5 In the UK, pensions is (or was) an important actuarial field. For all its faults, a defined-benefit indexed pension scheme more or less provides the retired community with what it needs. (Although the pension could perhaps be designed a little better to decline in real terms to recognise the lower spending patterns of older people in most areas other than health.)

Defined contribution schemes, on the other hand, do not meet the need of the retiring population. They are wasteful in terms of ongoing management and advisory expenses, particularly in the draw down phase. If the real income of the underlying assets is 4% per annum, a management expense ratio of 1.5% means that more than one-third of the real income is not accruing to the beneficiaries. There are significant costs (and leakage) on retirement when accumulation products are switched to income products under the guidance of advisers who are predominantly commission based. Finally there is significant residual wastage when there is no pooling of longevity risk and retirees seek to ensure their underlying capital is preserved.

The problems with running defined benefits schemes are well known, as are the institutional difficulties of accounting standards, as Martin Stevenson commented in the discussion of Rogers (2004):

'the accountants' perspective on defined benefit funds seems to be driven by an ideological purity. In 5 years time they may say they have a great set of standards for defined benefit funds, only to find that there are no defined benefit funds around to apply those standards to.'

However, as Carne (2004) points out, these institutional problems may be due to miscommunication (in which actuaries have participated) rather than anything materially wrong with the underlying science. Is it not in the interests of the profession to re-examine some of its old ideas (such as the actuarial balance sheet), identify potential solutions to the reporting framework, investigate

the needs of retirees and design a pension system to meet these needs?

Post-graduate research degree programs

- 3.6 One idea often mentioned (see for example Gale, 2005, p95) is leveraging any resources committed to research by the profession. The general idea is to achieve a commitment of (say) \$100,000 in resources for an outlay of \$10,000.

Although the track record is limited, the *AH Pollard PhD Scholarship* scheme seems to achieve this kind of leverage. For a modest outlay, the profession more or less secures the services of an able researcher and valuable support services provided by a university. From the profession's point of view the main risk is that it has little control over the direction of this research beyond the scrutiny that is part of the selection process. Although modest, the financial support is greatly appreciated by scholars at the time and, in due course, there will be some prestige in having been a 'Pollard scholar'.

If leverage is important, supporting scholars enrolled in higher (research only) degrees seems to have been effective. Perhaps some consideration could be given to awarding more than one such scholarship.

Actuarial Research Centre of Australia

- 3.7 The recent proposal to establish ARCA (Trowbridge et al, 2004), whether it succeeds or not, indicates that the importance of research has achieved increased recognition within the profession. Whether ARCA provides the research infrastructure needed by the profession is immaterial to the fact that some formal structure needs to exist.

Apart from funding for commissioned projects, much of the required research infrastructure for progressing actuarial science in

Australia already exists - Australian Actuarial Journal, the Horizon Meetings and various other seminar programs, conventions and forums. In addition, there are around 20 full-time academics in actuarial departments of Australian universities who are expected to be research active. Although it would be inappropriate to attempt to direct this academic and voluntary research, there may be some value in a regular forum, sponsored by the profession, where one objective was to identify (and document) research projects in which academics might be interested. This would include smaller tasks which might be suitable topics for minor theses.

One of the proposals is that ARCA publish a new journal. If ARCA is reasonably well funded and publishes its own journal, this will probably lead to Australian Actuarial Journal (AAJ) being downgraded even if a new journal does nothing more than discourage existing volunteers. However, AAJ (which succeeded the Transactions of the Institute of Actuaries of Australia) has now been in print for eight years and has a long history. Libraries know what to do with it and it appears on lists of scholarly journals. These things take time and, once established, tend to look after themselves. However, what might be regarded in business as 'goodwill' can be destroyed easily. Unless there is some wish to detract from AAJ, it would be preferable for ARCA sponsored research to appear in AAJ, adding to the appeal of the publication, rather than competing for resources and volunteers.

According to the ARCA Taskforce Report (Trowbridge et al, 2004, p3), it is intended that ARCA should:

' [give priority to] topics that add value to the public policy debate, discussion and development within the Australian community in areas that are related to the actuarial profession, in the broadest sense.'

If resources were unlimited, there is no denying the usefulness of such activities. However, according to this analysis, the real need is for the profession to be involved in the underlying science, with the

intention of achieving effective ownership of relevant paradigms. It is not clear whether the ARCA Taskforce had this in mind.

In any event, the needs of the profession go well beyond the ARCA proposal that may do little more than protect the position of the profession where it is already recognised. Consequently ARCA needs to be part of the profession's research infrastructure, not the other way around.

What not to do

3.8 This might be an appropriate point to suggest how to identify ideas which are not worth pursuing. If the profession is not actively involved in the underlying research, and has little prospect of becoming involved, recognition will accrue to the individual rather than the profession and any qualification created by the profession will not be taken at full value. For this reason, there is little benefit, for the profession, in offering specialist qualification in, say, security analysis and/or fund management. [This does not diminish the need for non-specialists to achieve a level of competency in investment matters for their potential role in life insurance, etc.] Anyone wishing to specialise in security analysis or fund management could be well advised to seek additional undergraduate training in accounting and economics and then seek a professional qualification that is recognised in the industry. More than 50% of the typical undergraduate actuarial curriculum would be irrelevant to anyone seeking a career in security analysis and/or funds management.

Similar comments would apply to providing financial support for research projects in fields such as how to prevent climate change, where the profession is not part of the recognised scientific community associated with these problems.

Another question, which is likely to attract some debate, is the desirability of the profession supporting research which enriches paradigms that are non-actuarial. Should be the profession not be seeking applications in, say, option pricing that use its methodology

of expected present values rather trying to adapt methods that rely on the no-arbitrage 'principle'?

Summary

- 3.9 The essential thesis of this paper is that recognition of the actuarial profession in a practice area depends on the profession being recognised as an effective owner of the underlying science or relevant paradigm. At the very least, the profession needs to be perceived as the recognised owner of commercial applications. The extent to which the profession needs to be seen as the 'owner' of the underlying theoretical ideas may vary from one application to another. In any event, an active research program is essential in achieving recognition of the profession and it may need to establish some formal research structure and play a leading role in encouraging research in particular areas.

Given the desire to improve recognition in the fields of banking, finance and investments, there may be some benefit to the profession from research into ways of adapting its methodology to develop an alternative paradigm to *modern finance* - possibly to achieve a Kuhnian revolution. A second area of major potential value to both the profession and community is research into defined benefit pensions, where the actuarial balance sheet concept might be capable of resuscitation. There could be common ground between these two proposals.

Acknowledgements

- 3.10 I would acknowledge Mike Barker, Paul Carrett, Jules Gribble and Anna Jones for reading the draft of this paper and for their helpful comments. I would also acknowledge the constructive comments of two anonymous referees. The views expressed are nevertheless my own and do not necessarily reflect the views of those acknowledged nor of any of my colleagues.

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Discussion Paradigms, Research and Recognition of the Actuarial Profession

Melbourne

Chris White BTh, MA, FIA, ASIA, FIAA

This paper deals with an important strategic question for the Australian actuarial profession, namely the place of research in securing the future health of the profession, this question urgently needs to be discussed. The use of Kuhn's theory of scientific revolutions, and more particularly the concept of paradigms describing a field of scientific endeavour, is not an unchallenged view within contemporary History and Philosophy of Science, although it has been highly influential (his original book sold over a million copies in 20 languages). However, although Kuhn's theory is relatively old (from 1962), it is fair to say that, as I understand contemporary thinking in HPS, it still retains a small but enthusiastic following.

Kuhn probably now has greater influence outside HPS proper (eg. within professions) than within the discipline itself. But the author's thesis rests on only part of Kuhn's framework (and as he says in the abstract, does not necessarily endorse Kuhn's view of the history of science – eg. his theory of how scientific communities coalesce around a particular paradigm, and the conditions which lead to a 'paradigm shift' - as an appropriate model for the actuarial profession). Nevertheless it is a useful tool for reflecting on the profession's development history and prospects, in particular how we might reshape the profession given some of our key areas of practice have undergone radical change, and arguably some of our key paradigms passed their used-by dates.

The relevant element of Kuhn which is fundamental to the author's thesis is the view that effective 'ownership' of relevant paradigm(s) is essential to the recognition of a profession within a particular practice area (see 1.10). I wonder whether the appropriate structure is more complex, and I think this question could have been examined further by the author (or whether he or others might be encouraged to do so in the future). For example, perhaps a profession might constitute a collection or hierarchy of core and applied paradigms, some closely associated with the profession ('owned' in the author's terminology), and some borrowed from or shared with other professions or scientific communities.

In the case of the actuarial profession, the core paradigm(s) might be argued to be various models of the interaction of interest and probability (traditionally, in deterministic approaches such as commutation functions, more recently in various stochastic methods), and some of the 'owned' applied paradigms might include the net premium valuation method, the chain ladder method, and the actuarial balance sheet. But some of the borrowed (or perhaps shared) applied paradigms might be various asset-liability modelling techniques, option valuation methodology, etc; ie. generally, developments in areas where practitioners in finance and mathematical economics have played a (or the) major developmental role.

It is interesting that, despite the UK profession's definition of 'actuarial science' involving probability and interest *separately* or *in combination* (1.7), our educational forays into statistics and operations research (quite some time ago), and the frequently stated assertion that actuaries invented discounted cash flow, it is really only in the combination of interest and probability applied in particular industries that actuaries could be said to retain 'ownership'. Statisticians arguably retain ownership of the applications of probability, and many professions now use 'compound interest', but arguably most of the modern development of the subject has been fostered by financial economists. Outside our traditional practice areas of insurance and pensions, even the combined use of interest and probability is not obviously our

exclusive domain. I wonder whether the paradigms themselves are not 'owned', so much as their application in particular industries or areas of activity. This might be particularly relevant to the actuarial profession, and as well as offering a possible explanation for the difficulty the profession (as opposed to individuals with actuarial training) has had in broadening its scope, might also point to an area of vulnerability. Whether the profession is better off trying to assert ownership of generic paradigms, or their application in 'owned' areas of activity, is worth consideration.

However the relationship of the profession to its key paradigms might be best described, the author's key point is unarguable: that a research focus is a critical element of maintaining public credibility, particularly in the context from other disciplines. The fact that economists are interested in many of the areas which have traditionally been the actuarial profession's domain, coupled with the experience in other disciplines where economists have taken an interest, should give us pause for thought. In a number of areas of social science, which one might think are quite remote from economics, economic methodologies now dominate.

Our problem is a highly specialised offering, and relatively small numbers, so even if we mount a major research effort, it is at risk of being swamped by the concentration economists could bring to bear on the subject. I do not present this argument as concluded, but I do think it is worth considering whether our best interests lie in an affiliation with the economics profession. (I regard the accounting profession as an interesting, but generally more operational and less attractive, alternative partner/parent to the economics profession, which lacks the latter's more rigorous intellectual/scientific base.)

The author's argument for the profession to develop an alternative to a flawed (or so he argues) financial economics is worth considering but I wonder if it is too risky a strategy, although it might be a 'plan A', with an affiliation with financial economists in developing more empirically derived fact-based models as 'plan B'. I would certainly agree with the author that a much greater educational and research focus in the BFI areas of interest to

actuaries, including reshaping our education programme to some specialisation from an earlier stage, makes a lot of sense. However I think all actuaries would benefit from a higher level of mathematics than is presently required – we are by no means so much more mathematically literate than other professions and disciplines as we perhaps once were.

Perhaps the problem the actuarial profession is facing with the declining core work in with-profits life insurance and defined benefit superannuation is that we have been too closely connected with those systems, and have become seen as their defenders rather than advisers on the broader array of wealth creation and protection provision alternatives. Much of our research and education focus in the past has been around the exercise of judgement regarding the size of reserves, distribution of surplus, etc in relation to these traditional actuarially controlled systems, which had the effect of embedding our services, until those systems were abandoned as too opaque, including our involvement as being seen as akin to that of the Gnostic priests of a ‘black box’ methodology.

A significant factor in this sea-change was an increasing focus on individualism generally, and in economic matters specifically, which challenged the cross-subsidies inherent in those traditional systems (between generations of WPLI policyholders, and promoted careerists and the rest in DB schemes), and led to the adoption of approaches which no longer apparently needed our core paradigm – the understanding of the interaction of interest and probability.

In the case of superannuation, we have jumped from DB where the employer bore the whole of the investment/inflation risk to DC where the employee bears it all, without considering any of the intermediate possibilities (such as updated career average), presumably on the grounds of complexity and mistrust. One cannot help wondering how long it will take for the volatility and general inadequacy of a 9% accumulation structure plus a means tested age pension to gain sufficient public awareness for the design issue to re-emerge. The slowness with which we adopted stochastic methodologies as rapidly increasing computing power made it

feasible also aggravated the problem by exposing the limitations of our traditional paradigms, especially as the 'fat' in these traditional systems was trimmed.

The suggestion that we have not been good at developing new areas of practice is contradicted by the role the profession has developed in general insurance in a few decades. The present hand-wringing would be a good deal more intense if our general insurance involvement was where it was 35 or 40 years ago. So the author's argument that the profession needs to focus its attention in developing its involvement in promising potential areas, and that this is best established by a deeper and more directed research effort, is very persuasive.

Where we need to focus considerable attention is in identifying the areas to pursue; I suggest it is the choice of those area(s) that is the issue, not our ability to develop an involvement when the right area is chosen and, importantly, sufficient resources concentrated on the development (as happened in the case of general insurance). To those who argue 'let a thousand flowers bloom', I would reply that we do not have the resources to do this *as a profession* – though of course individual members may well decide to pursue alternatives not being developed by the profession corporately. On the other hand we should not put all our eggs in one basket; the trick is in knowing how many baskets (and how many eggs).

In summary, a most stimulating paper dealing with a very important topic, which is well worth acceptance by the profession as a whole. I really congratulate Richard on his paper I very much enjoyed reading it.

Graham Whittaker MA, FIA, FIAA

Mr. President, Richard, Ladies and Gentlemen, my thoughts have only really developed after reading the paper and just listening, Richard's ideas arguably are excellent. I do like the generalised philosophical papers, it's a pity there aren't a lot more actuaries here. Richard effectively lays down the gauntlet to the profession,

are we going to be a growing, lively profession, or are we going to be a species like dinosaurs, will we get absorbed or will we disappear? It's a subject that has been raised by a number of other actuaries in the past. And while the Kuhnian model may or may not be the perfect model, I think it's a great challenge, I guess, a test, for the profession against that model and all the other points that Richard's made in his paper. I guess we have in our profession theories and we have applications.

So should we act as a pragmatic profession like engineers? They couldn't really care a stuff who invented their ideas; they simply take up ideas and concepts and apply them pragmatically very good. They're very good at applying theories into practice. They do have a control cycle. It's like a safety control cycle or a try out certain methods of building a road or a tunnel and then when there are problems with it, then you modify the methods and try another method. And they're essentially a pragmatic profession.

So I think it is very useful to compare ourselves with other professions and see how they have become successful. Have they got generalised methodologies, is it the power of numbers like the accountants? I believe that's their power, not the theories. They've got one theory, but they simply take over other experts' ideas when necessary and they're excellent at applying practice accountants.

So looking back at the theories which I learnt in the 1960s when I was at university doing maths and studying actuarial exams, I learnt about discounted cash flow, the use of compound interest and probability theory and risk. But more recently there has been the actuarial control cycle, and I wonder in terms of Richards' challenge whether that theory itself is a theory which we can own and that no-one else owns and that we should really, being a very generalised theory, we should sell very hard.

My experience has been in superannuation, life insurance and underwriting, but I don't know much about the other applications of the actuarial control cycle and discounted cash flow methods and so on, in other areas of finance. But surely it's a good thing for us to

have certain techniques which arguably if we own very well could be marketed better? Have financial accountants, or other professions got really good theories? Are they practical theories like the ones we use? I think a lot of our theories are generalised. In that sense they are very scientific, discounted cash flow, probability theory, use of mathematical models and sensitivity analysis are good practical methods.

So I ask you, are our theories too narrow or too wide? I mean we have been thought of by some people as being very narrow, but I think our theories are not narrow. They are very wide and they can be marketed well. And many more actuaries can work in other areas.

To what extent do we really need new ideas and theories or are we better to try and apply our existing concepts better. When we've got our Newtons' Law, do we really need an Einstein's' Law to take over, or is, or are our ideas already robust enough in practice?

I think we do need to think about competition more and there could be some good research done. Very simple practical research in comparing professions, looking at some of the techniques used and how they are marketed and how they're applied and how have they become successful in different niches?

The other thought was, it should mention the time in getting research published. When I was in the UK I wrote an expository article and got a prize for it. It was something Sydney Benjamin thought up and you're just allowed to write a quick article. It wouldn't be measured in the same way as standard actuarial journal papers were, but they would be tested and they would be published. And it's a good way of getting ideas out and about and you do get the kudos of having publication.

A final point would be, think about the underwriting professions of general insurance and life insurance. I don't think they've got a proper ownership of their theories. I think actuaries actually have a lot more idea of the theories behind life insurance underwriting, and

I'm an underwriter myself. They're merely applying some of the ideas that actuaries have thought up and also applying medical knowledge that they pick up. I'm not so sure what happens in general insurance but I think actuaries could generalise the theory of general insurance underwriting as well.

Thank you very much Richard for a very, very stimulating paper.

John Ward BSc, FIA, FIAA

Mr President, Richard, Ladies and Gentlemen, when I read the bit on exemplars, your paper took me back 29 years Richard.

It was 29 years ago that I was studying through the UK institute finance and investment and superannuation. I knew nothing about finance and investment, but I knew everything about super. The tutor for the finance subject was one, Richard Fitzherbert. And during one of his tutorials he thought he would have a bit of fun with us students, and he espoused some accounting theory that wasn't in the course, wasn't in the reading material, it was just some new theory that Richard had picked up somewhere.

Well, I went into the finance and investment exam with nothing to lose. I still knew nothing and there was a question that cried out for Richard's alternative theory. So I thought with nothing to lose I'll go for broke and I'll put all Richard's theory into this answer. It was quite a big question too.

Well anyway, I failed superannuation that I knew everything about, and I passed finance and investment. So at least the examiners of that subject were quite happy to accept alternative lines of thought or something outside the square.

Moving on, we all know that accountants are good with numbers. Every time we turn on the TV we see an ad that tells us so. In fact there is a certain gold mining company that apparently found a lot more gold because it recruited a CPA.

But what is the accountants' paradigm? I'm not too sure? Particularly when they are trying to branch out into these wider fields. I'm not suggesting that the Institute come up with some TV ads that tells everybody that actuaries can count twice as fast as accountants, but if I was an employer, I would rather recruit somebody who is excellent in their field and can communicate rather than an average person who just happens to have CPA or FIAA after their name. And when I look at, one of the questions on Richards' slide 6, I come to the conclusion that irrespective of whether we have a paradigm or paradigms, it's still the individual that is very important. And we need to ensure that our members of the actuarial profession are well rounded and they can communicate and they can show their excellence in the field on their own as well as the institute as a whole.

So thank you Richard for getting me over the line 29 years ago and for your paper today.

Richard Mitchell FIA, ASA, FIAA

Like Graham Whitaker, I was very pleased to see the paper and, in particular, the challenges the author has thrown open to the profession. I want to discuss paragraph 1.3 and, perhaps, answer a couple of the questions the author has raised. Why was the actuarial profession so important with defined benefit superannuation and why has its dominance declined?

When I started work in the early 1960s, virtually all superannuation benefits were provided by life offices on a defined contribution basis using endowment assurance policies. Eventually, actuaries became involved and felt there was a better way of doing things through an unallocated defined benefit final salary plan. There were significant tax advantages in running a defined benefit plan because more contributions could be paid in respect of the senior people within an organisation and even higher contributions could be paid if benefits were provided under a pension arrangement. The taxation system effectively favoured the provision

of employee benefits as superannuation retirement benefits far more than any other form of benefit.

It was a wonderful time for actuaries and the profession generally. Actuaries had the experience, the technical knowledge and also the practical knowledge to manage a superannuation fund. They were also knowledgeable in taxation and legal matters affecting a superannuation fund and could readily assist other professionals.

In looking at how the professions' importance declined, we could almost describe it as the coming of an ice-age. The ice-age for defined benefit plans effectively started in 1983 when suddenly, the amounts of retirement benefits accruing after June 1983 were taxed at a rate of up to 10 times the previous tax rate.

But that was just the beginning. Five years later, superannuation funds were taxed on investment income and contributions, although there was a partial reduction in the rate of tax payable on retirement benefits. The winters became still colder when reasonable benefit limits, the amounts of superannuation benefits that could be taken on a tax concessional basis, were substantially reduced. These are all external influences that have acted in reducing the attractiveness of providing superannuation benefits and are all tax related.

The introduction of the superannuation contributions tax, commonly referred to as the 'the surcharge', in 1996 was just about the last straw. It was framed on the basis of a defined contribution plan and introduced on the basis that 'the actuaries would be able to come up with something to make it work within a defined benefit framework'. In practice, this only complicated the running of defined benefit plans even further.

So you have taxation arrangements over a long period of time which were initially beneficial to superannuation funds and now certainly not beneficial. These are developments that cannot be factored into a plan for the future. For example, in 1996, the Treasurer had to find an extra revenue amount in the budget after

the ‘farmers in the bush’ were outraged at the prospect of a reduction in the diesel fuel rebate. The surcharge was the knee jerk response to the problem.

There are other signs of actuarial decline. There are very few employers of actuaries who are able to call themselves consulting actuarial firms. When actuaries make statements in the media these days, their employer is usually identified and it is rarely a consulting actuarial firm. Instead, it might be an employee benefit firm or a financial advisory firm. The profession is at risk of losing its identity as actuaries become immersed in more general and broader financial organisations.

The author has mentioned financial economics, which has as one of its planks, the existence of an efficient market and rational behaviour on the part of investors. There is a long record of persons who have had highly successful investment results through effectively catching the highly irrational behaviour of investors by buying stocks cheap and sell them back to the market when they are more fully priced.

One recent example is the work of investment manager Robert Drach. As an exercise for a nightly business show on for the US public broadcasting service, he has run a portfolio for almost 11 years to show how stock indices can be bettered. His results show that he has beaten the US S&P 500 and Dow indices by wide margins. The portfolio is done in real time and all of his transactions are recorded as they occur. It is a fully transparent and ongoing exercise. In the current environment, he would be categorised as a ‘value manager’. For those interested, the link to the portfolio is <http://www.pbs.org/nbr/site/research/investors/drach/drach/>.

Alan Brown BA, MSc, DipEd, AIA, FIAA

I have not read Richard’s paper as I have been busy on other research work. But I did come to listen to the discussion and I am most intrigued by it. To keep myself short, I will just concentrate on section 3 with a few suggestions.

The first one is the simple idea to resuscitating defined benefit pensions. I am a retired defined benefit pensioner. Defined benefit pensioners might be extinct in the future, but if you look at the situations and the prospects of your future life when you are actually a defined benefit pensioner, they are very, very much better than if you work.

The main topic that I want to talk about is the research committee. I want to follow up on a point made by John Ward that it is the individual that is important. So it is not the research committee that is the important thing, but the researcher.

What chances does a person who's an actuary have if he wants to make a career as a researcher? Is there any chance at all in this modern day, or do we all have to concentrate on commercial applications? Can you make a life-time career as being a researcher? The scholarship scheme which might get you started, but how do you keep going?

To me that is the underlying real problem of research. Who supports the research? Where do the ideas come from? How does the researcher live in the modern day actuarial community?

My experience as a researcher was working in the wider fields, where you got your ideas from a range of areas, and you transported them to other areas. Earlier tonight Chris White mentioned the fortunate history of the actuarial profession in the field of general insurance. One of the reasons for this was that when the actuaries started to take an interest in the area, there was a whole lot of fresh ideas being published by researchers who were active in the late 1960s. They made their ideas well known, they met together, and the best of the ideas were published in the ASTIN Bulletin. A lot of fruitful ideas were then taken from general insurance and applied to other fields like life insurance, health insurance; but they are the same idea.

Even today I am working on applying the ideas from risk theory to tennis. What is the chance, or the risk, that a tennis match will go

on for too long? You must add up the number of points that are going to be played in a game, the number of games, the number of sets, to calculate the chance that the match will all go for too long. It uses the same ideas, the basic paradigms that are being used in risk theory.

We are writing a paper on this at the moment, and one of the real troubles was that we had a mistake. The mistake was pointed out by one of the co-authors of the paper who happened to be an actuary. He pointed out that we had made a fundamental mistake and he advised us to go back to first principles. So we had a paradigm in crisis. We had tried to use certain well established methods to develop and extend the field but we knew the results we were getting were wrong.

We had assumed that the variables that we were working with were independent and identically distributed. They were certainly independent under the assumptions that we were making but they were not identical. We assumed both servers were stronger than the receivers. If the server won the game, then it was shorter and fewer points were played than if the server lost. For the weaker receiver to win the game, the score more likely had to go via deuce and play an advantage point before the eventually win. Thus the number of points played in a game, depends on whether the server wins or loses.

We required a theory where the variables were independent but not identically distributed, and so the old paradigm we were using collapsed. I have been busy spending my time trying to invent a new paradigm to cover this case, to replace our results, which were obviously false, with some results which might happen to be true. There is a lot of hard work in being a researcher, and it is not an easy task.

My final comment is that, to survive economically, there are times when you got to actually stop your research work and do more mundane things, like helping management out of a crisis, and the mess they have got into. Management needs the skills of researchers,

because researchers tend to be people that can work independently of their supervisors, and they can come up with the ideas to get out of the mess we are in. Obviously some research work needs to be done on pension funds. We know we are in a mess there. We know we are not serving the Australian public well. Let us do some real research on pensions and get us out of this mess.

Hugh Sarjeant BSc(Hons), DipCompSc, FIAA

As you spoke Richard, I of course took notes, so I could recall all my important reactions to the important matters you raised. On your second slide, which was the scientific community, you raised the topic of ‘actuarial science’, to which I wrote down, ‘does it exist?’

A number of speakers including yourself, Richard, reminded us that we do use discounting and probability when we do our work. I think most of us here would have spent most of our time in our working lives doing work which involves multiplying three numbers together. You multiply a discount factor, by probability, by another number which is normally a dollar figure. And I don’t know that we can claim to be learned society or a scientific community if that’s all we do.

And I think that most of the work that we do would be well within the grasp of the average year 12 school leaver. One area in which we may just justify our existence in that third number – the dollar figure – where we often have to do quite a lot of detailed modelling or estimation of various sorts to come up with something which we can defend. And I think its also a field in which in recent times we’ve got into some bother through not having models which were adequate or researched carefully enough to justify the path we took.

I do think if we want to call ourselves a learned community, or a scientific society or anything else like that, we’ve got a lot of work to do. I would actually see us more as being like a medieval guild, with sort of an evolving body of practice and not a great deal more than that. Whilst we have had a lot of people who have done a great deal

of work, often at their own cost, I don't know that we've quite got there if we want to compare ourselves with the Physicists, the Biochemists, the Economists and the like.

Richard you raised the topic about the necessity for research and you also mentioned the accountants. Perhaps when you respond, you can pick up on the point that they've got their double entry accounting method. I'm not conscious of a lot of other research they do to retain their grip on the accounting work that they do.

And lastly in the field of research (getting back to whether we are a learned society or not), one other thing I think we look for in a learned society is more than just having paradigms which you own or don't own. Something which I've always felt was conspicuously lacking for actuarial work was what I would think of as being a published and substantial body of 'texts', for want of a better word. A lot of us here would have done mathematics courses, where the texts met a certain standard in my view, of clarity, comprehensiveness, rigour and so on. Much of the material that I had to deal with in the course of my study and later has again been done conscientiously and at great cost to the authors, but which I don't believe meets that standard of generality.

Obviously in a place like Australia, you can't spend years developing texts which are going to be bought by such a small number of people. I think if we have a science at all, it's got to be international in some aspects of it.

Recently, by accident I came across a book which I thought did meet my hopes and expectations for what a book might be on. It was on 'Loss Models.' It was published, or written rather by three North American Actuaries. And I think it was written with a view that it could be read and studied world-wide. It wasn't just focusing on North American practice. In my view, if we don't have a body of work we can point to, not only for use by ourselves, but for comprehension by outsiders, we aren't going to meet our stated aim of being a 'learned community'. We will remain just a guild of some sort. That's all. Thank you, Richard.

David Dickson BSc, PhD, FFA, FIAA

I haven't actually prepared anything. I got up this morning and remembered that I was coming tonight and felt that I should say a few words even though Richard and I have discussed the content of this paper on many occasions. I think the first thing I will say, more for the published record is that it's very disappointing that so few people are here tonight. I think that Richard has put a tremendous effort into this paper and I think it's covering a lot of things that are very important for the future of the profession.

I might just pick up on a couple of things, firstly, research in itself and research within the profession. Richard mentioned the Pollard Scholarships.

So far both holders of Pollard Scholarships have been PhD students under my supervision, not that I have a biased view of them, but I think Eddie Leung who completed his thesis last year and Jackie Li who is completing his thesis this year have both done a tremendous job. It's not costing the Institute very much money. It's a whole lot less than they spend on ARCA and the results are tangible, so I encourage people to come to the Horizons Meeting when Eddie Leung is presenting a paper.

Richard talks a little bit about finance actuaries and the need to perhaps change the education system to have finance actuaries. For example, should a finance actuary (however we define a finance actuary) study life contingencies? The answer to that is possibly not. And I think that's getting at an issue that we need to consider as a profession. I recently read a paper by somebody working in actuarial education who complained that there was too much in the syllabus. I actually take a different view. I actually think that there is not enough. I think that the problem with the syllabus is that it is too broad, but there's not enough depth. If we look at an area like general insurance, and one of Richards's examples, run-off triangles, then in fact a lot of the research that is done in that area is being done by statisticians.

I think that if we as a profession are going to work in an area like that and compete in research in that area, then we need to think about our education. For example, generalised linear models is a topic that is used in estimation of outstanding claims reserves. Yet if you look at the professional syllabus on that topic it's absolutely pathetic. It really is.

I've just been making notes as people have been speaking. I think Hugh, I can recommend an excellent book to you. On a more serious point, Alan Brown was talking about careers as researchers. Well, I've something of a career as a researcher as I spend 50% of my time in research. There are roughly 25 jobs like that in Australia at present. I think there's certainly scope for an interface between the profession and the universities for some types of research, but not for all types of research.

Chris White has spoke a bit about economists. It's true that economists dabble in a lot of areas, but I think that they don't have certain skills that we have as a profession. I think that one of the things that we like to think of as a profession is that we're good at mathematics. Now, I would actually like to express here that a lot of qualified actuaries are not good at mathematics, but they could have been. I think, again, this goes back to Richard's point, that we actually need some more specialised education if we're going to be a strong in certain areas, and if we're going to produce good research in certain areas. Thank you.

Martin Stevenson BSc, FIA, FIAA

On Friday last week, we actually had lunch with some people in the banking and finance area to explore on an Institute level, what more could the Institute do in the area. The response from the people who are actually working in banking and finance was unequivocal. It was that we need to develop more leadership amongst our people; we need to develop greater communication skills. And this in fact was the point that John Ward made in his talk.

There's another aspect of the competitive advantage that I've always seen the actuarial profession have, that is, it's a profession. Yes we are a learned society, but the professional side gives us a great commercial advantage in that, through our professional standards and the trust that the government places in us, we do get reserved and statutory roles. There's a lot of debate as to, in some cases whether that is desirable, but from the point of view of a commercial place in the sun, it is invaluable for the profession. Richard's paper was a very good reminder that ARCA is not enough, nowhere near enough.

The kind of research that he is talking about, the fundamental research about our paradigms, is not something that is likely to be touched by ARCA. ARCA is meant very much to be pitched at doing research that is seen to have a commercial value.

In respect of education, Richard points out the need to revitalise our Part III course, which I think is a given. We should also look at our Part II, but then he rather bought me up short when he said, 'we also have to look at changing Part I'. That is a big step, particularly as Part I is aligned with other actuarial associations and global uniformity is something that has a high value.

Another aspect mentioned by Richard in his paper is the need for meaningful qualification. There will be a discussion in a future Council Meeting about that. There has been a debate, as a number of you have been aware, in the profession about perhaps using the term actuary for something like the Associateship plus professionalism level. This would enable us to give greater recognition to people in the newer areas like banking and finance.

Richard, I have taken on board your comments and other comments about delays in refereeing of some papers. The Institute does rely on a lot of voluntary work. I think a lot of people do their best. I take the point made that it certainly should be improved and we will work on doing that. Let me add my congratulations to an excellent paper Richard, and could you now sum up.

Richard Fitzherbert BSc, FIA, FFin, FIAA

Chris White raised the very valid issue as to whether Kuhn's model applies to actuarial science or whether the issue is not a great deal more complicated.

There is some confusion as to what is a paradigm and what is an application. Consider, for example the net premium system. This is really an application. The underlying paradigm is the concept of the expected present value. We have to defend the underlying theory and be pro-active in seeking improvements, otherwise the applications of an old theory will become unacceptable if someone else comes up with a better one.

We certainly need to think about where we concentrate our research. There is a problem with its voluntary or academic basis which makes it very difficult to direct although this could be influenced in criteria for publication in actuarial journals and where there is financial support such as the Pollard PhD scholarship scheme. But in the end, you cannot tell people what to research.

Graham Whittaker raised some questions about accountants and engineers. I have not thought the accounting professions as much as I have thought about the actuarial profession, but it seems to be that the underlying paradigm of accounting is the double entry system. If someone from outside the accounting profession came up with something superior, it would destroy the accounting profession.

Graham also raised the issue of the control cycle which is not a paradigm at all. It is just an actuarial version of logical positivism. John Pemberton and Alan Chalmers both make the point that logical positivism is no longer accepted as a valid scientific method.

It was suggested that individuals are important. This I do not deny. My point is that unless the profession is seen to own the underlying science, it will be the individuals rather than the profession that are recognised. 40 odd years ago, there was immediate recognition of the need for an actuary.

In BFI fields, employers look for an individual and if they happen to be an actuary that is largely irrelevant to them. The profession needs to aim for a position where employers first decide they need an actuary and then, as a second step choose an actuary from those available.

Richard Mitchell commented on the reasons for the decline in actuarial superannuation work. Defined benefit superannuation or defined benefit pensions is really an application of the basic actuarial paradigm of the expected present value. The reasons for the decline in superannuation activity within the actuarial profession in Australia and the United Kingdom are different. In Australia, the decline really started with the change of taxation which made the paradigm less useful. In the UK, the decline has been due to the failure or the perceived failure of the actuarial paradigm which is being replaced with one based on financial economics.

Even so, the catalyst for the change in the UK may have been a taxation event. Prior to the late 1990s UK actuaries used to value pension funds by discounting dividends which implicitly assumed there would continue to be a complete refund of advanced corporation tax. In the late 1990s, the discounted value of the dividends was substantially more than market value when the UK government withdrew this taxation concession.

If British actuaries had continued to value assets by discounting dividends, ignoring the advance corporations tax, the financial position of the pension funds would have declined dramatically. This happened at roughly the same time that the views within the actuarial profession were changing and an apparent solution to the problem was switch to market valuation of assets. The stock market declined and the financial world blamed the actuarial profession for pension deficits rather than the withdrawal of the tax concession. (There were other issues such as increasing longevity.)

Alan Brown raised the issue of full-time research as an occupation. Unfortunately most active researchers need to earn a living doing other things as well. At research based universities, the

normal expectation is for academics to be half-time researchers and half-time teachers with occasional periods of leave from teaching duties to concentrate full-time on research.

Hugh Sarjeant raised the rather interesting question as to whether actuarial science exists. Alan Chalmers devotes an entire book to a similar question: does science exist? These are very deep philosophical questions. Hugh also made the point, we may claim to be members of a learned society but our day-to-day activities really don't need it. Like pilots or aeroplanes which more or less fly themselves, you need the thorough background understanding and to make things look easy.

To reply to another of Hugh's comments textbooks are important. They establish the recognition of the profession and there is a need for some fairly basic good text books in some fields. For example, compound interest. The existing textbook that was written by the profession is now 20 years old and a lot of the universities are using books published by non-actuaries.

David Dickson suggested that, one of the big problems with the educational curriculum was that it was too broad and too shallow. As I say in the paper, the education of those who wish to specialise in finance really needs to start and needs far more depth. They need far more pure mathematics in their undergraduate program. Similarly those who propose to specialise in general insurance may need a great deal more depth in mathematical statistics and probability. There is an argument for allowing people to choose specialisations earlier. Particularly in finance, the educational syllabus is nearly not deep enough the way it is.

Martin Stevenson raised the issue about the importance of communication, leadership and personal qualities in BFI fields and that a recognised profession is an advantage. If this is the case, why do so many firms of consultants these days who are primarily actuaries no longer call themselves consulting actuaries?

If a profession is an advantage we could possibly take advantage of it, particularly in the finance area, by offering finance specialists full membership to those who reach the same level of competence and expertise in finance as fellows are required to meet in life insurance or superannuation. Such people would have full voting rights, but could not be called Fellows because of legislation in life insurance, etc.

It is frustrating that Part I of the educational syllabus is international and can not be changed. Why do we have to let the Americans and the British tell us what to do all the time? Why do we not strike out on our own and let them copy us rather than the other way around?

Proper recognition of people engaged in research is vital including the recognition that is provided to authors by circulation of their work in print. While full circulation in print to all members might be wasteful, a smaller number of copies strike me as a small cost in relation to the effort required in writing a paper.

Martin Stevenson

Thank you very much Richard.

Sydney

Clare Bellis BA, MA, FIA, FIAA

I've volunteered to go first, not because I expect to do justice to Richard's excellent paper, but just to make sure I don't miss the opportunity to speak!

I'm approaching this paper, not from the point of view of somebody in the finance research area, and hopefully we will hear from others in that role, but as a historian of the professions who is interested in the development of the actuarial profession.

Richard says that we've been talking about moving into the wider fields for 50 years. In fact the term 'the wider field' was coined by Fred Menzler in 1925 – which means that the discussion has been going on for some 80 years. But I would say that the whole problem really started back in 1848. That was when the Institute of Actuaries in London got going. They started off defining their purpose as everything to do with life contingencies. Then they had a re-think, and by the time they wrote their constitution, they had adopted the expression which Richard quotes in page 7 of his paper, 'the consideration of all monetary questions involving separately or in combination the mathematical doctrine of probabilities and the principles of interest.'

So that was really a territory grab by the Institute of Actuaries about 150 years ago, claiming that we're not just experts on life insurance, but that the whole area of probability plus interest is our territory. And ever since then actuaries have been making little raids out of the fortress of life insurance to try and capture some of that territory. Sometimes successfully, often not.

All professions guard their territories and try from time to time to expand into new areas, but I don't know that there is any other profession around the world or through history that spends so much of its time debating its definition and trying to go out and capture

these new areas. I think it's a distinctive feature of the actuarial profession that was built in from the very beginning.

Richard is suggesting I think that the only way we can hope to capture a territory is by bringing to its problems a paradigm or scientific approach which we own, which gives us the right to be seen as experts in that territory. He takes the idea of a paradigm from Kuhn.

A similar argument was made by Abbott in his book 'The System of Professions'. I summarised his arguments in my 2000 paper 'Professions in Society'. Abbott argued that to take command of certain questions a professional group has to have an abstract theory of knowledge, which makes them the experts on that area.

In 2000, I considered whether the idea of focusing on all problems to do with money, probability and interest could serve as our abstract theory, and I commented: 'the difficulty for actuaries is that others are already occupying this territory. One obvious example is option pricing theory, which was not invented by actuaries nor first applied by them, and which has only recently found a place in the actuarial syllabus. If the actuarial profession is to be recognised as the source of solutions for all problems involving the consideration of interest and probability, then it must either defeat the current practitioners in this area by offering more effective solutions or a more persuasive variation on the abstract theory, or absorb them into itself.'

The British profession has made some move towards the second option by resolving in 1998 to extend affiliate membership to include professionals and academics in actuarially-related fields.' Then I went on to talk about whether trying to absorb the competition was likely to succeed – which I thought not. And if as Richard mentions in his paper, quoting from the Task Force, the competition regard the actuarial profession with some contempt, they are hardly likely to want to join us.

But I didn't really go back to the idea of coming up with a more effective or more persuasive solution to the problems, which is what Richard's paper is pressing for. He sees value I think in the actuarial paradigm, or at least he believes that actuaries can develop their existing science into a new more effective paradigm. So then we turn to the idea of research as the way of either selling the actuarial paradigm, by demonstrating that it does genuinely work, or of coming up with a new improved version. Richard then goes on to consider ways to make that research happen.

I agree with Richard that research is important. I'm just not sure about any of his suggestions about how to make research happen.

Let's look at another profession/science, that of economics. The Economic Society of Australia calls itself a professional society on its website but it's not really what we would recognise as a profession as such.

It is certainly a 'learned society', and it certainly has a 'science'. Membership of the Economic Society of Australia is open to anyone who is interested in economics. There are no entry requirements, exams or the rest of those hurdles that face the would-be actuary. If you're interested, you're in. Oh, and you've got to pay the subscription. That's \$80 a year. And for that you get two journals a year. If you look at their website, it's very simple in structure, and I happen to know that the administration runs out of one lady's suburban home.

Compare that with our Institute offices and staff, our whole edifice of committees and the things that we spend our time on, guidance notes, professional standards, and all the rest of it. All those things that go into being a profession take up a lot of our time.

The economists don't have to worry about any of this. If you look at what makes an economist, it's usually a Masters or a PhD in Economics. There are 29 universities in Australia which offer Economics. Of those, eleven of the departments around Australia have more than ten PhD Students, one has more than 50 PhD

students and a further ten Economics departments, have between one and ten PhD Students. As a rough estimate there must be about 50 PhDs in Economics coming out every year – about the same number as the new FIAAs coming out every year.

So if we're going to compete in terms of generating science by using PhD students, we're way behind any established sciences.

Richard argues that the profession can't hang onto an area of science unless we are actually creating that science by research - I hope I am not misinterpreting what he is saying here. But I think we need to recognise that there is a distinction between the science and the profession. Actuaries are trying to be both. Economics is a science, and then they go out there and practise their science. As practitioners, they may in some senses be considered as professionals, but they don't have that whole professional structure.

Let's contrast that with financial planners. Now that's a job that I think is crying out to be professional. Individuals need those guys, who are telling them where to put their hard earned money, to be professionals. They don't need a lot of science, but they need the structure of professional conduct.

Actuaries in traditional fields needed both. Insurance companies and pension funds needed actuaries to be professionals, because of what that said to the outside world about how well life insurance was managed, whether the bonus system was fair, whether the defined benefit schemes were balancing the interest between the employer and employees, etc.

The employers in the new finance areas need the science, but they really don't need the profession. So it's always going to be a battle to get the actuarial profession recognised in these areas. You're always going to have people come through the training who don't want to pay the thousand odd dollars a year that's required to keep the professional body going.

The other thing is, I think that the actuarial profession is a profession worn out over the years by trying to do so much itself. We're a very small profession, but we want power over the education system. The economists leave it to the universities. The final stage for qualifying as an economist is to get a PhD, thereby generating some science in effect, not wearing out all the other economist practitioners by writing syllabuses, accrediting courses, writing courses, setting papers and marking them and all that sort of thing. In the same way a lot of the research is at the universities. You have those strong economics departments all around the country – and around the world – and some of the academics in those departments are just teaching service courses to first year students, but a lot of them are doing a lot of research. Then there are the finance departments, the statistics departments... Are practising actuaries going to match that science with the research they do after their day jobs?

There are suggestions in the paper that I agree with and that I think are important, but I'm pessimistic about the chances of ultimate success. I fear I'm better at seeing the problems than the solutions! However, one line I think we should pursue is to rethink the direction of the education. Maybe Finance Actuaries should be recognised as a distinct type of actuary, who qualify via a PhD. Doing the PhD generates the science, and takes the pressure off the rest of the profession to examine them. If we realise that they're not fulfilling the same sort of professional role as the life insurance actuaries, that they don't need that whole structure of profession, then they don't need to be examined in that same way to make sure that they are exactly on the same wave length etc as applies for people are signing off in professional roles.

Thank you, Richard, for a very stimulating paper.

Anthony Asher BBusSc, FIA, FIAA

I lectured at Wits University in Johannesburg for 14 years, and my view partly comes from the debate that I had with my colleagues at the university about the place of a profession and a discipline. My

colleagues in the faculty of science believed that universities were there for the disciplines, such as zoology and physics, and that we should put almost all our money into their research programmes. My view was that the universities are not there for the disciplines but for the professionals: law, medicine, accounting, engineering and actuarial and we should have the money. The difference is that a discipline is a science (or art), and the other is the application of the science or art. I think that we as actuaries share with the accountants and the engineers and the doctors, the problem and not the answer.

This is where I disagree with Richard. He wants to develop ownership of the answer, the paradigm. I don't think that is something we should be attempting to do, because these paradigms shift as part of their nature. And the answer of 1950 is a different answer in 1990 and a different answer again in 2006. The problem however is the same. The problem I think that the actuarial profession addresses is that of financial security. And we find answers to the problem of financial security in our services through insurance, life and general, super funds and banks. I think this defines the profession. And if we start with the problem and go where it leads us, we are quite at liberty to use whatever the disciplines produce for us. We can welcome the new wave of physicists joining the economics profession – if you have come across econophysics and its interesting work on power laws and state transformations that makes Brownian motion look passé.

It's also an application of marketing theory. For those of you who've actually read Levitt's Marketing Myopia, which is the classic marketing text, he says that rail companies in the United States in the early twentieth century misunderstood their business: they thought they were in the rail business, but that they were actually in the transport business. If they had understood that they were meeting needs, not delivering products, they would not have lost their dominance of transport in the United States.

The message that companies should think in terms of the need they meet rather than the product that they deliver is important for us as well. The need we meet is that for financial security. The

products that have been used to meet those needs: defined benefit schemes, with-profit policies, unit-linked master trusts, are means to the end, not an end in themselves. We should focus on the end and look at better ways to designing the means.

So I would like actuarial research to be defined in terms of finding ways of using theory to meet needs, and be based on whatever disciplines and paradigms are found useful, rather than thinking that we should own the theory of option-pricing and be looking for new uses for it. I think the marketing approach is more manageable, more likely to be a success, and more likely to give newer benefits to the people we're attempting to serve.

Mike Barker MA, FIA, FIAA

Richard, thank you for introducing me to the world of Thomas Kuhn. If you hadn't introduced me to it, someone else would have done it a short time later, at the AFIR meeting in Zurich last year. I was talking to a Frenchman by the name of Christian Walter who said his main interest was epistemology and his favourite author Thomas Kuhn. So clearly the paradigm is in crisis in France as well as here.

Usually when Richard writes a paper I find plenty to argue about, but with this paper I find it quite hard to argue, as basically I'm very supportive of Richard's hypothesis. I will focus on some of his solutions which I find somewhat less than convincing.

First of all paragraph 3.1 which suggests developing an alternative paradigm to the underlying science of modern finance. That presumes that modern finance is a paradigm in crisis. I think it is threatened. I think it is under attack, I don't think it is quite in crisis yet. The sort of events which I would have thought would have created the crisis in modern finance don't appear to have done so. I would have thought that the Telecom bubble in the late '90s in the US would have caused a massive crisis for the efficient market hypothesis. It doesn't seem to have done so. Trillions of dollars were

lost by institutions following large cap stocks in the late '90s, but have simply been forgiven.

What might be an alternative paradigm? I've given some thought to this as an investment practitioner. If we just go back to the teachings of Benjamin Graham, which I know Richard is very fond of, that's not a new paradigm, that's an old paradigm. The sort of work that I'm quite excited by at the moment is in the area of behavioural finance. But a lot of this work is just tinkering at the edges of the existing paradigm. It's explaining anomalies rather than actually coming up with a completely new paradigm.

When I think about what is wrong about financial economics, the one thing I really think is wrong is the definition of risk. Whilst variance its uses, it's got to the stage where you mention 'risk' and people think 'variance'. Whilst variance may create risk, the opposite is certainly not correct. There can be many situations which have very low variance and are very risky. Some of the latest structured products should be considered extremely risky, yet their variance is extraordinarily low on an historic basis. Basically their risk is almost binary. Either they do very well or you lose the lot. Nothing like a normal distribution of returns, not even a skewed normal distribution.

The sort of risks we are looking at these days cannot be modelled by mean variance techniques and these risks are becoming more and more common. They are in some of the structured products that have been put together by the investment banks in Australia. So what we need is a new way of looking at risk.

As we see institutions place more of their money into non-standard investments or alternative investments, so financial economics has less of a role to play. And yet most people are still doing their asset liability models on the assumption that these new instruments have got some sort of mean variance and correlation with the other asset prices. So there's an opportunity for actuaries to come up with a new paradigm of risk. How about a unified risk theory, which incorporates market risk, credit risk, operational risk,

systemic risk, and any other sort of risk you can think of, basically looking at risk as what can go wrong rather than risk being variance

The second area I want to talk about is ARCA. I was on the original ARCA Taskforce, but I stood down from the taskforce after its first report. I'll say now that I'm disappointed that we haven't seen more progress, because I thought it was an exciting concept. But I think what ARCA is trying to do is quite different from what Richard is talking about. I don't believe ARCA is really focused on research in the academic sense. ARCA was very much focused on applied research which the government or industry considered worth funding. Having said that I would agree with Richard that it would not make sense to develop a second journal. I agree that our existing journal does need more support. I fully support Richard's idea that authors need recognition. The greatest recognition we can give an author is a full room of people and I'm afraid that we fail abysmally on that count tonight.

The third thing I would like to mention is the educational side. The banking and finance taskforce suggested some answers, but I really don't think they are going to make any difference. In the new Part III system everybody has to learn a bit about investment which seems like a good idea, but I've become somewhat disillusioned with that. The fact is that we're only giving people a 13 week course which only just scratches the surface and it's really not educating people to go out into the world and say anything really intelligent about investment. It is there to help actuaries if they are going to work in life insurance and general insurance. Module 2 and module 3 creates an opportunity to create finance professionals but to date that's been a failure because hardly anybody is signing up for it as far as I can see.

The fact is that people who want to become finance professionals are not seeing the actuarial qualification as a way to do it. Okay it's early days yet, maybe things will change but I'm attracted by what Clare has said earlier. Get a PhD somewhere else and then we'll give them an honorary membership in the institute. I think that will make more sense because clearly we are not at the moment with our

current educational system going to produce finance professionals. They are just not interested.

I would like to thank Richard for a very stimulating paper. I'm sure we'll have many more discussions on this topic.

Brian Chu

Compared to many of the more seasoned people who are in this meeting, I probably can describe myself with fire in my heart and probably more hot air in my head than one can use for a hot air balloon. Hopefully in these next few years, next few decades I probably learn more so pardon me if I sound like I'm relatively uninformed as I make this presentation.

Firstly, thank you Richard, you have pointed something out which the profession really needs and it's professional recognition and the fact that we need to keep the people who did actuarial studies in the University in doing actuarial studies, in doing actuarial area when they are out in the industry. The things which I have recognised which may have been an impediment to our profession is practicality versus ideals.

Students who graduate from the university and come out and look for a job are motivated firstly by money. Sad to say, but that's what happens in day as well, whoever pays me most, whichever company it is, I'm actually their employee. Now the problem is most of the companies who pay really well aren't those who value actuaries as such.

Look at your typical investment bank who probably pay six figure salaries and work an undergraduate for 100 hours each week. They don't care if you have actuarial knowledge, they don't care if your mathematics is beyond what even their managing directors are able to do or understand in the first place. They just want you to do the work which they hand to you, which could be as much as up to 18 PowerPoint presentations, 100 hours each week. So there is a problem in that your typical student would come out with a fire in

their heart but they are in a place where they don't use their actuarial skills.

Now the other problem is coming down to a quote in Richard's paper, 'actuarial training may even be seen as more vigorous than other alternatives and give actuarial graduates an advantage when seeking employment'. Ideally, yes! When I first did actuarial studies, and this was 2001, I thought I would do this because I could probably get ahead of the accounting and economic students in getting a job. I took much more time than the accounting and finance students in finding a job and I didn't get the job in the actuarial field either.

So the issue of the improving research to help our industry become more competitive in the job market is an ideal, but it seems like even our own actuarial fathers aren't able to accommodate for the actuarial students who are coming out to work when they graduate. They can't find a job in this industry. And we also have problems with a relatively shrinking actuarial market for graduates. In fact a lot of the students which I've known, people in my year, people in the year below me, many of them have been very discouraged when they came out in a first role, because of the process in obtaining that graduate position was much more difficult than initially anticipated. There are still two or three from the previous year who still haven't found a job, even though they may actually had very good grades and they will be a great addition to the workforce. No one is able to hire them. I can't say for sure why they are not hired because I'm not someone from the HR, or someone who makes the decisions.

So, there is a problem. Actuarial students with actuarial training aren't getting that certain cutting edge, that advantage which we advertise ourselves as having in the job market.

Now Richard also mentions the recognition of individuals in the field rather than the profession. That is quite true. I guess I can't speak for investment banks, because I've only been there for a very short while and then I can't say it was the most wonderful experience. But I was only a face in the crowd. No one thought more

favourably of me just because I did actuarial studies, nor the fact that I got a higher average than anyone who joined the company in the same year as me. I did exactly the same thing as everyone else. There was no recognition of the profession.

One manager asked me, 'so what was your degree?',
and I say, 'oh, actuarial studies',
and he goes, 'oh, okay',

He writes that down and then turns around and gets back to his work, as if it was just a matter of fact, rather than some issue of recognition. Not that I can say I will be a great example of an actuarial student - far from it. But I guess that the more talented stars in my year and in previous years would probably share that same sentiment. When you first come out, or if you been there for a long time in a different area of finance, actuaries are just seen according to their productivity. In terms of education, I find that again I'm speaking on the students' point of view rather than the more experienced person, but I've found that part II in the control cycle was much more congruent with actuarial paradigms than say, part I.

Although Part I gives us very good grounding, it is a high price to pay to differentiate ourselves from another profession, like the accountants for example. I think I enjoy having a very good go at accountants unfortunately. It's not that I have any lower regard for them, I respect their profession. In fact their profession is well recognised in industry, probably more so than us actuaries. But an actuarial student learns at a different level compared to the accounting student who probably spends more of his or her time in the undergraduate days learning principles, learning theory, applying the theory into balance sheets, common size statements and auditing. In auditing, they are given the theory and practical concepts but their exams do not require them to have an intimate knowledge of all aspects of auditing theory and practice.

For actuarial students, in Part I, you can probably get through with being able to understand the facts, reproduce the formulae, but it's in the control cycle where I found the stark contrast, I always thought that I was doomed to repeat Part II in fact, because I came from an Asian background. I'm someone who will take the facts, and absorb them, rather than take the facts and build upon them.

So it is one place where I find actuarial education being an advantage, but also an extra hurdle. And it's something which Richard has pointed out. Maybe it's something we can do to Part I as well, so we're building up the students' understanding. Teaching could be improved so that research can be encouraged, which leads me to the next part, research.

I'm not sure whether there is a social stigma against research, but it seems like the typical plain vanilla research student would be regarded by lay people as being someone who has trouble finding a job, or someone who has a serious personality problem, so that they must lock themselves somewhere and read papers. When they are presenting their results to those who are not familiar with their topic, they may encounter people who would probably just nod and smile and say, 'he's a smart person but I can only understand 10% of what he's talking about.' The thing with research is that, it is under-marketed. I am currently doing research and it seems like a research student is out of touch with the industry. Not that I'm blaming the industry. In fact I respect them because, they have more important interests to pursue.

If they aren't able to turn out the profits for their company then they are next in line to get the sack. Currently the industry is seen as being more focused in developing their business operations rather than finding new ways of improve on the efficiency of the business operation. They want something which is short and sweet, they want something which they can immediately look at and say, 'I can see where this is being put' – 'I can see where we can make the changes,' rather than sit there and say, 'Well it's a great research paper. let me spend the next 10 weeks trying to understand it myself, the next 20 weeks explaining it to my directors and then the next 30 weeks

applying it into our system which is already well-established'. So the problem is that with research we probably need more people doing research, but there are not enough incentives to attract research students.

Currently, the industry paid three times or twice the amount for students to come out to work rather than review research papers and come up with a new innovative idea. So in terms of Richard's proposal, yes, it's true. We actually need to have better harmony in research and paradigms so that it fits in with the practices that are currently accepted by the industry.

You may ask though, how are we going to harmonise this if the industry is interested in making and generating profits, to keep their competitive position in their market and moving up the ladder. It's almost looking back at funds management where looking at it cynically, a performing manager is probably not likely to take a unique position because he's afraid that if he or she underperforms in the market, then he or she loses the title as a performing manager because the boss will say, 'everyone else is doing this. Why did you say you want to try something new? You have now proven to us from the results that you are underperforming against everyone else'.

That's the same thing with research. Bringing up a new idea is good, but everyone else seems to be doing quite well in the comfort zone of the current existing practice. So the next company which decides to take on the new idea must bear the risk if it doesn't work. So I guess it's something which I can only present as a question, I haven't got the experience or the knowledge to provide the answer, but hopefully, with Richard's very thought provoking paper, it will amount to something in the near future.

In order to bring out the actuarial profession to the position that does justice to the efforts we put in, we have to retain our talents.

Thanks a lot Richard.

Carol Lee FIAA

I work for Macquarie Bank developing structured products for hedge funds. As Mike correctly pointed out, the nature of the business is not one that you can model using traditional methodologies: as he said, sometimes your risks are binary. They are 'take a gamble' and either it pays off or it doesn't. In all the time you take the risk, you know it's there, you take the gamble and you say, well, you know it doesn't pay off, or you know you're going to lose money and we'll see one way or the other and see what happens.

So a lot of the times, traditional things that you learn at university and training are not useful. All these terms just really don't come into play. I'm saying 90% of the time you don't even bother discussing those sorts of issues. You sit down and say, what are the chances of losing money? How much do you think you are going to lose? What's the profit you can make out of it? Do you take up on this one?

When Richard says that research is important, I agree one hundred percent. Research is important to be able to identify what those risks are and maybe someone can come up and model these risks. Because at the moment there aren't appropriate models being used.

Conversely though you have to question how much do practitioners in the industry actually want to do this? Whatever you can say about research I would say all the people I work with don't care whether or not I'm an actuary. In fact, I would say that most wouldn't even know that I'm an actuary. The problem is that when you go in and say that I'm an actuary, no one cares and so what incentive is there for anyone that is an actuary who's worked in the area, to participate in any educational activities or any professional activities?

Other than attending a few functions every year, I really don't know what being a member of the Institute really means as far as my work goes. And I think it's a scary thought. What relevance does

being a member of the Institute of Actuaries bring to actuaries in the context of where I work? Really it means little or nothing. I've just started a Masters of Finance Degree, simply because the Fellowship of the Institute of Actuaries of Australia does not have much credibility. If you say you have a Masters Degree in Finance then people say, "okay I understand what that means." But being a Fellow of the Institute, they don't know what that means. And I can go and pay thousands of dollars to do a course where I've covered all the material before, and I'm not really learning that much, but it just gives me that credibility.

So I think it's a huge concern for the actuarial profession. But one thing that Mike mentioned that I thought was very valuable was this area called risk management. It's something that actuaries do have a reputation for knowing, and being the experts at. I think it is something that is very valuable to study. Actuaries aren't recognised as risk managers but they do practice in risk management and know the real risks that are out there. I spend a lot of my time discussing what risks are around and it is certainly something that no-one else has looked at. And the course doesn't look at risks necessarily in as practical a manner as risks arise in real life.

Thank you very much for listening. And thank you Richard.

Stephen Dixon BEc, FNZSA, FIAA

Firstly a thank you to Richard, I always enjoy reading your papers.

I must admit that after that 10 minutes of reading, I was trying to understand why we should be interested in Richard Kuhn and how he can guide us to an actuarial framework and foundation. I then realised that you were placing leads as part of building to the conclusion in the Paper.

A number of speakers have mentioned communication and I was interested in listening to comments made this afternoon, is I wish to touch on similar points in some different ways and perhaps offer

another view on 'what is an actuary'. My own view is that it is someone who combines a knowledge of the value of money, the future value of money and an understanding or an instinct for risk. Critically, an actuary doesn't see future answers in a single point - they see a range of possibilities. And the profession has built a science around this, becoming a learned profession by saying, for example, for reserving there is a range of outcomes and we don't know what the particular answer is. What we've done, from a business perspective, is said, we can arrive at a single point (answer) that our employers or life company or super fund or health insurer or general insurer is comfortable with and can run a business on. That is, an answer such it is highly unlikely they will go bankrupt next year or in the next 20 years. I personally see that is what makes an actuary.

The proving of the profession is how do you apply that in other fields. I sometimes share Mike's depression on where the profession is going. But then I look at the growth in general insurance and health insurance. I think health insurance in particular will be a sector of massive growth for the profession, making up for superannuation and life insurance. However, the actuarial application in health has been a relatively straightforward adaptation of skills already in use.

The question is how do you do it in wider financial area and that is very difficult. I personally struggle with in a lot of work I've been involved with valuing companies for takeovers or sale as I don't see valuations as a single point or as a yes or no answer - I always see a range. In talking with business leaders, they don't want that. They want a single point. Interestingly, if a company announces that their profits, then the accounts (accountants) state that the net profit is \$2.3 billion (say). People presume that is actual and exact science, that it is an exact number. After all it's just adding amounts up. Well, that's rubbish. It is an estimate, however, it is a point estimate that is accepted by the market.

The question is how do we develop with the wider fields and really stay central. For example, banks are moving to hold quite significant separate capital adequacy reserves for operation risk, which the industry is struggling to do, at both a conceptual and practical level. How do you put in a business or financial framework to actually estimate a reserve number that is robust enough to stand up.

This is an interesting area that I think the actuarial profession could do more in. And I think an example when perhaps a research group as suggested by the paper could be formed.

It also leads to what I believe is an important actuarial issue, resolving a range of values to an accepted point estimate. Banks have quite sophisticated and complicated credit risk systems. Yet they are generally based on some very basic business view. For example, a bank may take the decision that it is prepared to sustain a loss of x% of its accounting profits once every 2,000 years. From this 'business rule', you can do a whole lot of black box work to come up with a risk policy manual which might say, for example, that the maximum loan exposure to a company rated S&P 'A+' is \$200 million – a point answer. Of all the employees in a bank, only a few (maybe 10 to 20 in 20 or 40 thousand) fully understand how a credit limit of \$200m for 'A+' exposures supports a 99.95% 'risk of ruin' business rule. Further, the vast majority of stakeholders have no interest in how the answer was derived, only that it has been and that loans can be made on this basis – ie. if the client is A+ we can lend them \$200 million.

And I've got to say that I am not aware of actuaries being particularly involved in banking risk management. There is a wide range of people, often with substantial banking experience in the area but I'm not aware of actuaries in that area. And if I may suggest, one of the simple reasons historically has been, were too expensive.

Finally may I make the observation on the Part III exams based around my belief in what makes an actuary. By only examining one practice area in detail, I think there's a considerable risk that people don't see similar techniques applied in different areas and also they don't necessarily see that many actuarial answers have a range of outcomes.

Richard, thank you very much for another fascinating paper.

Martin Stevenson BSc, FIA, FIAA

Thank you to everyone who contributed to the discussion.

I would like to bring people up to date on Institute activities in respect of a number of matters that have been raised this evening.

Firstly, the Institute is actively seeking to increase the number of actuaries working in Banking, Finance and Investment. One of the main weaknesses that employers in Banking, Finance and Investment perceive in actuaries is a lack of communication skills and a lack of being able to apply our knowledge to business environments. The Institute is addressing both these issues through the Commercial Actuarial Practice course.

Secondly ARCA has been mentioned a few times. I am pleased to announce that we are very close to appointing an Executive Director for ARCA, as well as getting the legal structure in place. However I agree entirely with the comments today that ARCA is only a small part of the Institute's overall research program.

Thirdly, I agree with the comments made by Clare that the Institute needs to rely more heavily on University courses for Part III, rather than using our own resources.

Fourthly Richard raised the question as to whether defined benefit funds can be revived. This will not happen in my working lifetime. In Australia, there are too many reasons why employers have abandoned defined benefit funds. These include: the

perceived difficulties of incorporating defined benefit funds into salary packages, the growth of part-time and casual employment, the move away from a paternalistic society, the increase in onerous legislation etc. Richard also asked for a new paradigm in defined benefit funds. If I were starting off with a new defined benefit fund, I would introduce concepts of prudential reserves that we have in life insurance and general insurance into superannuation.

Richard Fitzherbert BSc, FIA, FFin, FIAA

First I would like thank those of you who came to the meeting this evening, the editor of AAJ and the two anonymous referees. One of the important motivating factors in the research process is recognition and perhaps the Institute could do more to recognise the efforts of those involved – particularly those who work behind the scenes. Also there are those who read papers in draft form and those who speak at meetings.

Clare Bellis' comments were quite detailed and precise and well thought out. I was unaware of the fact that discussion of wider fields began so long ago. I read Clare's paper on *Professions in Society* when it was published and read it again when I wrote this paper. There were some points I had completely missed and I thank her for drawing them to my attention.

There seems to be a broad consensus that the mere existence of ARCA recognises that research is now perceived as important. However, simply throwing money at the problem will not solve it and ARCA is, at best, only part of the solution. This paper was written four months before an interview with Greg Taylor appeared in Actuary Australia. He said: 'any profession will stagnate without a healthy research base'. He then went on to say: 'regardless of the self promotion carried out by the profession, its ultimate place in society will be determined by its skill set'. I slightly disagree with the second comment, for reasons set out in the paper, but I thoroughly agree with his comment about self promotion. This will not have a lasting effect and I would place ARCA-type research close to that category. It seems to be looking for highly relevant research that will grab

headlines. This is not the sort of research that will create or develop relevant paradigms that will sustain the profession for decades.

Anthony Asher asked the interesting question as to what business the profession was in. Is it in the business of compound interest and probability theory or is it trying to meet the communities' needs? All I can do is suggest that the profession needs to conduct research to develop paradigms for meeting the community's needs within the domain of actuarial science which is defined by compound interest and probability. If the profession wishes to be recognised, then these paradigms need to be seen as 'belonging' to the actuarial profession.

Mike Barker began by suggesting, that modern finance is not in crisis. It has been shown not to work and everyone still believes in it. Therefore it is not in crisis. These observations confirm Kuhn's observation. It does not matter how big the crisis, unless there is an alternative paradigm available people will continue to preach and practice the paradigm in crisis. Until someone comes up with a credible alternative, students will still be trained within the defunct paradigm through exemplars. As an example, consider the first assignment of Part III Module 1. Students need to use mean variance portfolio theory to derive an answer to most of this question.

It is disappointing to spend several hundred hours writing a research paper that only 20 people are interested in discussing. However, these discussion meetings are very important for the future of the profession. When I qualified as a Fellow, UK fellowship certificates were handed out at Sessional meetings which were key dates in the diaries of all London based actuaries. The Australian version of UK sessional meetings used to be important dates for actuaries based in Sydney and Melbourne. Now we have numerous other events. Work patterns may have changed, making evening meetings unpopular and employers may no longer encourage staff to attend discussion meetings the way life insurance companies may have done in the past.

Brian Chu suggested that there was no advantage in telling a prospective employer that an actuarial degree was harder than an economics degree. My own observation is that some employers have identified actuarial programs as sources of raw talent, but, having used the training in this way they soon forget that they hired a trainee actuary.

Brian also drew attention to the lack of incentives for research. In the paper I suggested that the two key factors were interest and recognition. The profession seems to have lost some of its research culture. This is evident in the lack of interest in sessional meetings and the way that convention programs are organised.

Carol Lee's comments were disturbing. One of her observations was the practice in merchant banks to use rough approximations believing there is not really any point in detailed calculations. Of more importance was the lack of recognition of her Fellowship which she found to be a disincentive to membership.

In this paper I argue that this lack of recognition is because the profession is not seen to be conducting research in fields in which people like Carol are active. If the profession is generating some new ideas and this was being conducted through the infrastructure of the profession, then I her employers might see real value in her attendance at these meetings. So I think this, so I think research has important, is an important aspect of the fact that employers in wider fields don't really see the point of people continuing along with the profession.

While all actuaries are trained in probability theory up to a certain level, far beyond what is generally needed in practice. However, if someone is struggling with a statistical problem that goes beyond mean and standard deviations they tend to seek the help of a university maths department rather than contact The Institute. This is because university based maths departments are seen to be conducting the science, and are consequently the people that are recognised in the field.

Much the comments apply to the success of the actuarial profession in general insurance and health. Before the Australian profession got involved in general insurance, there was already a European tradition of research in general insurance and the US Casualty Actuary Society. The underlying science of general insurance was already seen to be actuarial. When insurance companies suddenly started looking for advice the profession was already recognised the research base was already there. In a way much the same thing may have happened in health with the introduction of the idea of unfunded lifetime community rating.

So, how does the profession develop and grow in wider fields such as banking and finance? Simply creating a qualification in finance and investment will not work, no matter how difficult the examinations. The profession will not be recognised as credible unless it is seen to be involved in relevant research and develops the underlying science.

Martin Stevenson

Thank you very much Richard.

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