

Taking actuaries out of the classroom and into the boardroom

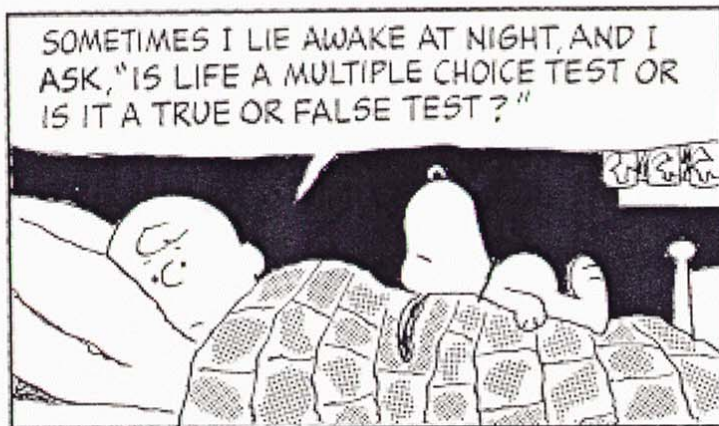
***John Shepherd
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..... but not overnight!

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Beyond knowledge: How to develop actuarial capabilities

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Communication ...

- ***... is a tricky business!***
- ***... is the Eighth habit of highly effective actuaries (Andrew Brown, 2005)***
- ***... is just one element of a set of attributes needed for effective actuarial practice (my thesis)***

Outline of presentation

- ***What capabilities are needed “to be an actuary”?***
- ***What is the nature of these capabilities?***
- ***How do other professions foster the development of capabilities in future practitioners?***
- ***How can we develop these capabilities in future actuaries (actuarial students)?***
- ***What pedagogy supports capability development?***
- ***Are there (actuarial) examples of good practice?***
- ***How do students see capability development?***
- ***Re-shaping the actuarial education curriculum***

Author's perspective

- ***Nearly 22 years teaching thousands of actuarial students at Macquarie University in Sydney***
- ***Teaching actuarial students face-to-face in Canada, USA, Kazakhstan, PRC, HK, Singapore, Malaysia (as well as Australia)***
- ***Teaching actuarial students via internet in many countries (including New Zealand Control Cycle students)***
- ***SoA C7 seminars 2001-2006***
- ***UK Profession's CA2 seminars 2006-08***
- ***Grad Dip (Ed); Masters in Higher Ed***
- ***Research focus: student learning***

Frank Mitchell Redington:

(accepting a Gold Medal from Institute of Actuaries)

"As a profession we are apt to be accurate, cautious, consistent, and reticent, and in these lies our strength; but if they do not leave enough room for impulse and imagination, they can be a weakness. The actuary who is only an actuary is not an actuary."

Capable people ...

“... not only know about their specialisms; they also have the confidence to apply their knowledge and skills within varied and changing situations and to continue to develop their specialist knowledge and skills long after they have left formal education ... Taking effective and appropriate action within unfamiliar and changing circumstances involves ethics, judgements, the self-confidence to take risks and a commitment to learn from the experience.”

John Stephenson (1998)

Actuaries ...

“... not only know about their specialisms; they also have the confidence to apply their knowledge and skills within varied and changing situations and to continue to develop their specialist knowledge and skills long after they have left formal education ... Taking effective and appropriate action within unfamiliar and changing circumstances involves ethics, judgements, the self-confidence to take risks and a commitment to learn from the experience.”

What is a capable actuary?

- *What do the professional bodies' education syllabuses reveal about actuarial capabilities?*
- *Very little (apart from glimpses in individual subjects), because they are almost entirely knowledge-based (lists of content topics)*
- *What about the “peak” actuarial body (IAA)?*
- *IAA syllabus also is content-driven, with lists of topics like:*
 - *stochastic theory of interest*
 - *correlation and regression analysis*
 - *credibility theory ... etc ... etc*

What are actuarial capabilities?

- In summary, the (UK/Aust/SoA) professional bodies' education syllabuses focus very strongly on knowledge development***
- Implicit (unintended?) message is that capability (or even skills) development is something optional and supplementary to “real” (knowledge) learning***
- Little can be gleaned from actuarial syllabuses about the capabilities required for actuarial practice***
- Content-driven programs, with fragmented attention to skills development, result in “the separation of personal skills development from the acquisition of specialist knowledge” (Stephenson, 1998)***

What are actuarial capabilities?

One version of the set of capabilities:

- ***Technical expertise***
- ***Problem solving***
- ***Critical evaluation***
- ***Flexibility***
- ***Creativity***
- ***Rigorous analysis***
- ***See “big picture”***
- ***Strategic approach***
- ***Integrity***
- ***Self-management***
- ***Interpersonal***
- ***Negotiation***
- ***Communication***
- ***Business acumen***

Adapted from Gribble (2003)

What are actuarial capabilities?

Another version of the set of capabilities:

- ***Quantitative skills***
- ***Markets & institutions***
- ***Regulatory & industry environment***
- ***Problem solving***
- ***Attention to detail***
- ***Business acumen***
- ***Financial reporting***
- ***Communication***
- ***Leadership***
- ***Advisory skills***
- ***Proactive capacity***
- ***Ethical behaviour***
- ***Teamwork skills***
- ***Innovative thinking***
- ***Project management skills***
- ***Risk management skills***
- ***Aware of “big picture”***
- ***Can take informed risks***
- ***Lifelong learning***

IAAust survey of employers (August, 2006)

What are actuarial capabilities?

Another version of the set of capabilities:

- ***Quantitative skills***
- ***Markets & institutions***
- ***Advisory skills***
- ***Proactive capacity***

***How to live with uncertainty
in a super-complex world!***

(Ronald Barnett)

- ***Financial reporting***
- ***Communication***
- ***Leadership***
- ***Risk management skills***
- ***Aware of “big picture”***
- ***Can take informed risks***
- ***Lifelong learning ability***

IAAust survey of employers (August, 2006)

Nature of capabilities

- ***Capabilities are not “acquired” in a single course***
- ***Capability development is on-going, for life***
- ***Exams do not evaluate capabilities effectively***
- ***Educational research consistently shows that the development of capabilities:***
 - ***is more effective when development opportunities are integrated with core knowledge learning***
 - ***is less effective when development opportunities &/or assessment are segregated into “skills subjects”***
 - ***enhances understanding of knowledge content when integrated with it***

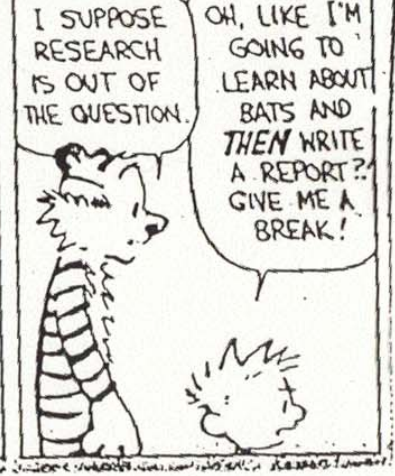
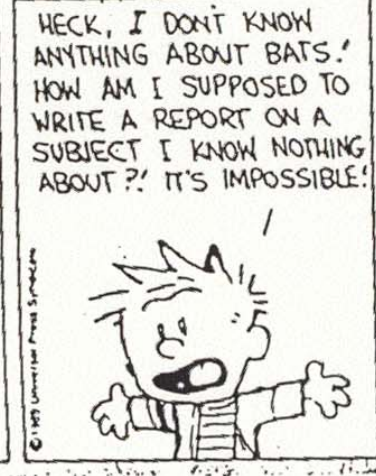
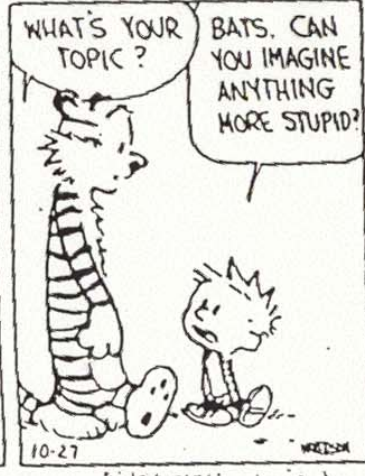
What are other professions doing?

- ❑ Actuarial profession (UK/Aust/SoA) lags behind other professions when it comes to identifying and fostering development of capabilities**
- ❑ Example: Since 1996, the Australian professional accounting bodies (ASCPA and ICAA) have required accredited university programs to demonstrate that students learn a set of skills**
- ❑ Five categories (skills areas) are specified:**
 - Cognitive (routine, analytic/design, appreciative)**
 - Behavioural (personal, interpersonal)**

Two common actuarial issues

- Across the English-speaking actuarial world two issues have been debated for some years:***
 - ***Need to improve actuaries' communication skills (or improve the perception of actuaries' communication skills)***
 - ***Need to generate more actuarial research***
- Both issues can be addressed through the development of the capabilities of future actuaries (that is, through education)***

CALVIN & HOBBS



Fostering passion for research

- How do we foster passion for research?*
- Are we asking the right question ... ?*
- Alternatively: During their education, how do we avoid suppressing the natural desire in learners to find out why and how through inquiry?*
- The seeds of a passion for research are unlikely to take root and grow in a learning climate that is characterised by passive “intake and regurgitation”*
- Research capabilities are unlikely to develop within an assessment regime dominated by examinations (“What does the examiner want me to say?”)*
- John Dewey: “... learning is based on discovery ... rather than on ... transmission of information”*

One example of good practice

- ❑ *Why does this represent good practice?*
- ✓ *Content learning and capability development are integrated*
- ✓ *Assessment format and criteria are clear to students & “authentic” (directly testing performance on worthwhile tasks)*
- ✓ *There is consistency (alignment) between the learning goals, the learning activities and the assessment*

Example of good practice

❑ *From North America ...*

➤ *SoA Course 7 (Applied Modeling)*

➤ *Sadly, C7 is no longer with us!*

✓ *Pass rates are reasonable (often greater than 80%) - emphasis is on learning (not on restricting progression)*

✓ *Features integration of knowing and doing*

Example of good practice (SoA C7)

□ SoA: Course 7 (Applied Modeling)

- **Focus: Interpreting, applying, documenting and communicating (to a client) the results of a modeling exercise undertaken to solve a specific business problem**
- **Format: 4-day seminar (on Days 1-3: several case studies involving teamwork and presentations; on Day 4: project to be completed individually)**
- **Assessment: Report (usually to client) produced on Day 4 is graded by holistic criteria; grading rubric shown and explained to students on Day 3**

The student perspective ... 1

- ❑ *Julian Lyons, a UK actuarial student, quoted in “Actuary of the Future” in “The Actuary” magazine (June, 2007, p41), responding to the question “Next move for the actuarial profession?”:*
 - *“An exam structure that doesn’t put off non-mathematicians at an early stage”*
- ❑ *At a university in Beijing, PRC, about 7 years ago, I met with a group of actuarial science postgraduate students; one said:*
 - *“I’ve passed the first four SoA courses, but I don’t understand why I’m learning all this maths & statistics”*

The student perspective ... 2

□ Question to SoA Course 7 students:

➤ *“Which elements of Course 7 do you recommend retaining in the new educational system?”*

□ Some typical responses:

➤ *“I feel that the format of C7 and the material presented may be the most useful universally of all of the SOA exams (sic).”*

➤ *“The communication education is very helpful. Should definitely educate actuaries how to get non-actuaries to understand the recommendations.”*

➤ *“Better learning experience than another exam!”*

The student perspective ... 3

□ Other responses from C7 students:

- *“Communicating complex ideas (orally and through written reports) is very important. This should be retained ...”*
- *“Communication, working in groups, case study discussion.”*
- *“Interactive learning with other students and instructors.”*
- *“The interactive process. Communication is an art (not a science) that requires practice.”*

The student perspective ... 4

□ Macquarie University Control Cycle students:

- *“... my idea of what an actuary does has definitely changed ... imagined that the job involved heavy mathematics and relied much on calculators. I did not think actuaries needed to work in teams with other actuaries to complete a project, nor did I think of the actuarial career as a profession.”*
- *“... encourage us to draw upon learning from other areas like accounting and financial statement, law and finance. From this perspective ACC1 is not a learning course but a course on learning how to think and where to start to think.”*

The student perspective ... 4

□ More Macquarie University Control Cycle students:

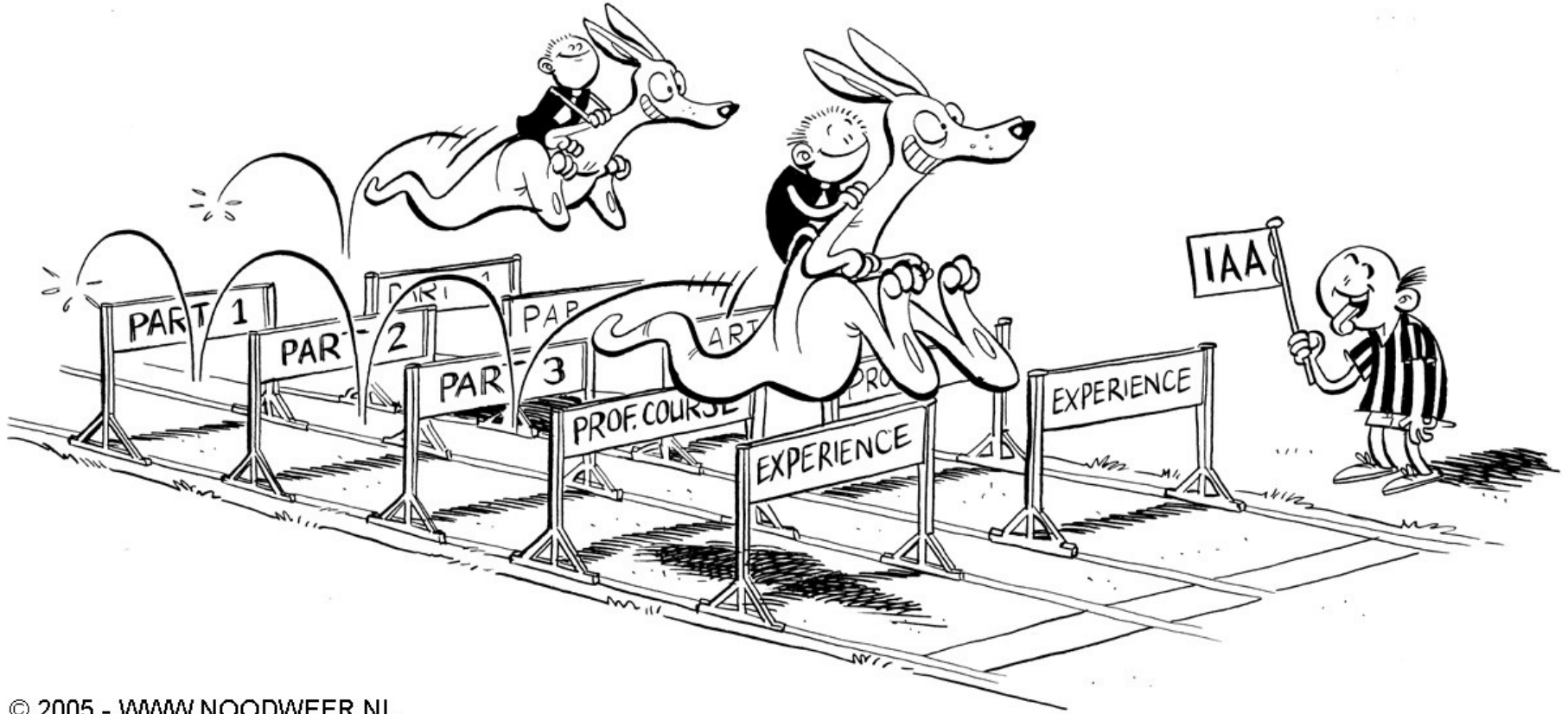
- *“... thought that actuaries are working with numbers only and mostly work in insurance and finance ... he/she need to work with a team of people with various expertise (that’s why communication skill is so important)”*
- *“... has been instrumental in shaping my view of the role of actuaries to a great extent. After completing the Part 1 subjects, I had a much narrower view of the profession and I could only relate actuarial skills being applied to particular insurance applications ... [now] I am able to understand the applicability of the actuarial knowledge to a wider range of areas ...”*

The student perspective ... 5

- ❑ ***Macquarie University finance student 1:***
 - ***“I now look back at how I use to approach learning and I see the long road I took. ACST201 has taught me that learning is more than about plugging numbers into a formula and getting an answer. ACST201 has broadened my understanding of learning ... to seek the bigger picture and connect ... facts together.”***

Whose responsibility is it?

- ❑ ***All parties in actuarial education (including students)***
- ❑ ***Professional bodies:***
 - ***(SoA and CAS: Accredite universities to educate)***
 - ***Develop curriculums that are more than lists of technical knowledge content (not only what actuaries need to know)***
 - ***Encourage a range of appropriate assessment formats***
 - ***Accredite university programs that are soundly based in the evidence from research about student learning***
- ❑ ***University actuarial programs:***
 - ***Integrate capability development with knowledge content learning (and reduce the content where necessary)***
 - ***Use a range of appropriate assessment formats***



Shape of actuarial education

(using current IAAust program as an example)

***Part IV: Work experience,
professionalism, lifelong CPD***

***Part III: Investments, commercial
practice, specialisations (life; GI;
finance/inv; super/savings)***

***Part II: Actuarial Control Cycle (principles
of actuarial financial management, links,
“big picture”, professionalism, etc)***

***Part I: Stats, fin maths, contingencies, fin econ,
econ, finance, accounting, probability, modelling***

Re-shaping actuarial education

□ Why re-shape actuarial education?

- *To be consistent with sound pedagogy*
- *To improve quality of both core knowledge understanding and capability development*
- *To develop better individual lifelong learners*
- *To match professional education in other disciplines*
- *To produce a more diverse professional membership*
- *To provide beginning actuarial students with a learning framework: “What an actuary does” (eg control cycle)*
- *To allow learners to re-visit control cycle (“What an actuary does”) from time to time, at increasing levels of sophistication*
- *Cyclic process, but within an upwards spiral!*

Re-shaping actuarial education

□ *What needs to be done (in Australia)?*

- *Recognise capability development, and integrate it with knowledge development, in the curriculum***
- *Maintain curriculum balance by reducing knowledge content***
- *Encourage appropriate assessment methods for capability development (eg projects, research, authentic tasks, written reports, presentations, etc – individual and collaborative)***
- *Remove current arbitrary constraints on assessment (at least 70% by conventional examination)***
- *Introduce a modified control cycle – “what an actuary does” – as a front-end subject (at an appropriate level of complexity)***
- *Abolish “second-class” (ie non-exemption) subjects in university programs by recognising completed degrees***

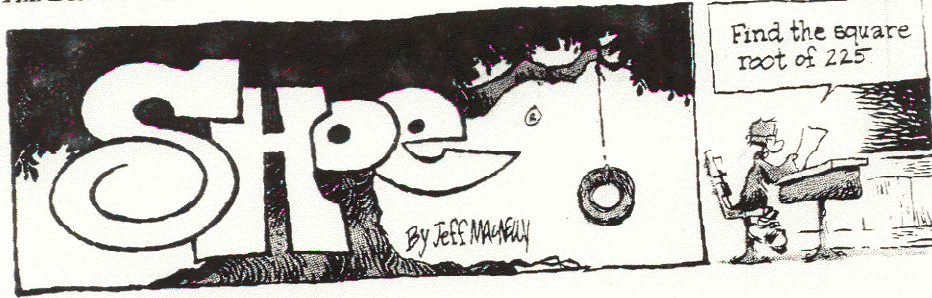
A vision for the nature of “regulation” of university actuarial education:

“IAAust’s approach to supervision of university actuarial education is principles-based rather than relying on prescriptive rules. A principles-based approach is one that emphasises learning outcomes in setting educational requirements and expectations, but does not seek to specify or prescribe the exact manner in which those outcomes must be achieved.”

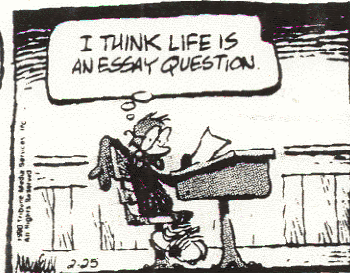
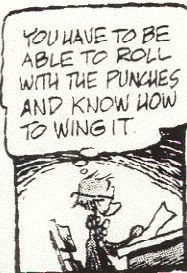
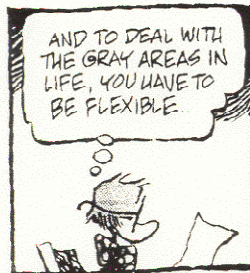
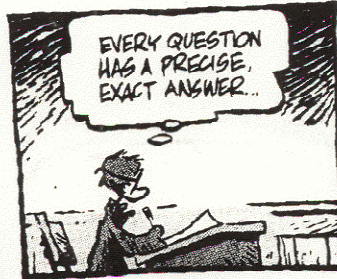
(Adapted from a description by Katrina Ellis of APRA’s approach to prudential financial regulation)

Actuarial education needs to engage students as people, not just as knowers

- ***This means recognising understanding (knowledge), doing (capabilities) and being (confidence in an uncertain world)***
 - ***Attributes include (Barnett):***
 - ***Carefulness, thoughtfulness, humility, criticality, receptiveness, resilience, courage and stillness***
 - ***The actuary who is only an actuary ...***



SUNDAY, FEBRUARY 25, 1990



What do you think?