

**Submission
No 50**

PROFESSIONAL ENGINEERS REGISTRATION BILL 2019

Name: Name suppressed
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Partially
Confidential



To the Legislative Assembly (NSW) Committee on Environment & Planning

Chair: A. Greenwich (MLA)
Deputy Chair: F. Wilson (MLA)
Members: A. Chanthivong (MLA)
J. Griffin (MLA)
N. Smith (MLA)

Written Submission: Inquiry of the 2019 Professional Engineers Registration Bill

Rather than submit the 'form' letter sent to me by J. McCarthy of "Professionals Australia", I submit the following three (3) pages for your consideration.

Section A Two (2) extracts from 'Structures, or Why Things Don't Fall Down'
J.E. Gordon (1913-1998) Penguin 1978

From Chapter 1 The Structures in Our Lives (faulty towers, Sydney)
The Theory of Elasticity, or Why Things Do Fall Down

"Many people...dislike theory, and usually they do not think very much of theoreticians. This seems to apply especially to questions of strength and elasticity. A really surprising number of people who would not venture into the fields of say chemistry or medicine feel themselves competent to produce a structure upon which someone's life may depend. If pressed, they might admit that a large bridge or an aeroplane was a little beyond them, but the common structures of life surely present only the most trivial of problems.

This is not to suggest that the construction of an ordinary shed is a matter of calling for years of study; yet it is true that the whole subject is littered with traps for the unwary, and many things are not as simple as they might seem. Too often the engineers are called in, professionally, to deal with the structural achievements of 'practical' men at the same time as the lawyers and the undertakers."

From Chapter 15 A Chapter of Accidents
'Engineering Design as Applied Theology'

"In nearly all accidents we need to distinguish two different levels of causation. The first is the immediate technical or mechanical reason for the accident; the second is the underlying human reason. It is quite true that (engineering) design is not a very precise business, and so forth; but much more often the 'real' reason for an accident is preventable human error.

It is rather fashionable at present to assume that error is one of those things for which it is not really fair to blame people who, after all were 'doing their best' or are victims of their upbringing and environment, or the social system – and so on and so on. But error shades off into what is now very unpopular to call 'sin'. In the course of a long professional life spent, or misspent, in the study of strength of materials and structures I have had cause to examine a lot of accidents, many of them fatal. I have been forced to the conclusion that very few accidents just 'happen' in a morally neutral way. Nine out of ten accidents are caused, not by more or less abstruse technical effects, but by old-fashioned human sin – often verging on plain wickedness.

Of course I do not mean the more gilded and juicy sins like deliberate murder, large-scale fraud or sex. It is squalid sins like carelessness, won't-learn-don't-need-to-ask, you-can't-tell-me-anything-about-my-job, pride, jealousy and greed that kill people. Though some engineering firms have splendid design teams, far too many firms in this country are technically incompetent – often to a criminal extent. Many of these people have risen from the shop floor, and, out of a mixture of pride and meanness, they intensely resent any suggestion that they should seek proper advice or employ qualified staff.

It is my experience that far more accidents occur every week than ever get into the papers (media of any format); generally they are caused by lack of proper care and professional competence. I very much doubt whether the remedy lies in the imposition of yet more regulations. It seems to me that what is wanted is the creation of more public awareness and a climate of opinion which regards such 'mistakes' as morally culpable. The person who drilled a hole in the wrong place in the wing-spar of a wooden aeroplane, plugged the hole, and said nothing, was acquitted. Presumably the jury thought that the moral blame was negligible.

What is wanted is more publicity; the difficulty lies in the law of libel. In most cases, if the real causes of an accident are made public, somebody's face will be very red, and it is likely that their business or professional reputation will suffer. Most practising engineers are acutely aware of this and have to keep quiet or risk heavy damages. In my opinion there should be some way round this, for it is in the public interest that accidents and blunders be publicised."

For example 'sins' examined at recent Australian judicial inquiries include

large-scale fraud	Royal Commission into Banking and the Financial Services Sector
sex/abuse	Royal Commission into Institutionalised Child Abuse

Part B A few fragmented thoughts...on the Professional Engineers Registration Bill 2019

New South Wales should follow the current the German practice where no registration is required, however only those persons with an accredited four (4) year university engineering degree, five years of engineering practice and continuing professional development are legally entitled and insurable to practise as engineers.

To identify those persons 'entitled' to practise as an engineer in NSW, perhaps make it compulsory to affix post nominal letters and testamur number. Many unqualified people deliberately 'hide' behind managerial 'job' titles and perform engineering level work. Why is it that many self-proclaimed 'think outside the box' engineers with years of 'practical' experience flagrantly void employer indemnity and liability insurance policies or use qualified underlings to underwrite commercial and business malpractice. Consequently, much engineering work and many engineering projects 'managed' this way inevitably run over time and over budget...hence 'productivity' performance levels are constantly undermined.

The role of professional indemnity and public liability insurance is also questionable. Is it illegal to insure persons not qualified to practise engineering.....?

The 'engineering' institutions (some over 100 years 'old') are part of the problem. Do these institutions place too much emphasis on frequent flyer point and 'rewards' programmes? Or should the effort be on improving the standards of competency within the profession. Too many people arrive in this country (457 visa or similar), pay three or four hundred dollars to an engineering institution to 'vet' their qualifications and experience. Why is it that many turn up to job interviews waving a 'letter', but unable to answer simple engineering questions?

And there is the waste of financial resources (tax deductible) in form of yearly subscriptions to the many 'professional' institutions. Many of the 'many' now encourage members with no professional level qualifications. The basic annual subscription (fee) to these 'professional' institutions does not include 'registration' or liability and indemnity insurances. The multi-layered membership fees should not attract tax concessions ...as occurs with health funds.

Whilst many of those 'unqualified' will cry 'foul' if registration is made a legal requirement, in this age of 'distant on-line learning' there is the opportunity to 'qualify' by completing a 'soft' engineering course now offered by those universities competing for student numbers. 'Soft' being courses stripped of mathematics, science subjects and laboratory work. The conventional wisdom seems to be that computer simulations readily replace engineering laboratory work where the theory is put into practice and the practice brings the theory to life.

Most university level engineering 'courses' are 'audited' by the self-regulating engineering institutions. After many decades, is it time to review this arrangement.....?

Other questions the committee should consider not related to Superannuation Funds

When is an occupation a profession.....?

Monkey-see, monkey-do (mimicry) versus working (thinking) from first principles.....?

Information or knowledge.....?

What is the difference between licensing and registration.....?

Is the word 'professional' in professional engineer superfluous.....?

Part C A few personal anecdotes (In Confidence)

Having completed an indentured traineeship (fitting & turning + engineering certificate) with Australian Iron & Steel in the 1980s and an engineering degree in the 1990s it is my belief that educational and vocational standards have slipped, especially since the introduction of course fees and the change from 18 to 14 week semesters.....et cetera.

When I started my degree part-time as a working mature-age student, the head of mechanical engineering (a woman) addressed the assembled 180 first year students in a lecture theatre,

"look around you.....three in every four of you seated here will not complete this course....."

She was dead right...there wasn't any time for the school's traditional 'beer and pie' nights....

To close,

I wish the Committee well, 'matching' New South Wales community expectations to a simple, inexpensive but workable registration scheme for engineers, in whatever field of engineering.

Sincerely,

██████████ BE (Hons)
Mechanical Engineer