EDITORIAL

ART? SCIENCE?

Whenever, in any field of endeavour, there is theory and practise, there is controversy. Usually this is harmless, trivial, good natured banter between practical people and theoretical "eggheads", the groups recognising their interdependence and acknowledging that when theory and practise differ there should be co-operation to resolve the difference, for that is progress.

So it is in engineering. But occasionally the extremist wing of the practical faction is provoked, generally by some more or less esoteric theory the eggheads have attempted to foist on it, into serious debate about whether engineering is predominantly art or science. Debate is futile; but it is not always sterile. Too much heat and discord is generated.

Consider, for example, the recent move by a dissident group of artists to oust researchers and academics from the ACI Building Code Committee. Perhaps this is a tongue-in-cheek exercise, not intended to be taken too seriously; but the instigators have been persistent enough to force it to a vote. (The result is not known at the time of writing.)

The group will not find it difficult to attract support from users of ACI 318-71, because this new edition of a respected Code contains among its many innovations some that are impractical and a few that are impracticable. Many of the new provisions have been explained in ably written papers and in the Commentary, available with the Code, and illustrative worked examples of design problem solution have been published. But the drafting committee apparently failed to recognise an essential difference between a text-book style treatment and real design work. Moreover, it was obviously insensitive to the mood of designers who resent such an enormous increase in design effort as is required for compliance with the new rules. Review authorities will consider whether insistence on compliance with some of the rules is not more likely to be damaging to design that it is to be constructive, because designers, compelled to track through a labyrinth of detail will lose something from the overall appreciation of the basic mechanics of their structures that it is so essential to keep intact.

Extremists amongst the practical engineers are those who use "egghead" derisively rather than affectionately, even perhaps enviously, as the moderates do when talking of academics and researchers. The typical extremist is proud of his intuitive ability and prefers intuition to scientific appraisal. He does not need many warnings, the most recent and clear of which is given in the Australian Commission report into the causes of a major bridge collapse, that engineering judgement, even when exercised by highly skilled and experienced people, can be tragically and fatally misleading. He would benefit from recognising that the structural intuition he lays claim to was developed from the science he once practiced, including those parts of it which were empirical, and were not necessarily less scientific for being that. Were he to do this, he might realise that, because his intuitive sense has not benefited from enough recently made rational studies, it will be quite as rusty as his science. Engineering intuition is not a native thing.

It is good to have frequent reminders that there is very much in engineering that is not yet rational, and some that might never be; but undue emphasis on the art content, particularly when it implies criticism of the science, simply encourages the incompetent.

Academics and researchers need our help in making the product of their work palatable to designers. Moves like that of the ACI dissidents and similar events in the history of the development of earthquake engineering are unhelpful.

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