

answered this important question is because proving that simple methods give good results cannot be done by simplistic methods. Only by evaluating statistically the results of sophisticated approaches can we adequately determine the boundaries of applications for simple methods and the quality of results. The considerable effort required would, however, if successful have been worthwhile when set against the savings in design time that could be achieved to the benefit of the profession and ultimately their clients. To make progress a co-ordinated project by the Society will probably be required.

Not one paper at the Conference dealt with economics as its primary subject. If with regard to the cost of earthquake engineering there are many opinions but few facts available, it is because any viable cost analysis is a time consuming process which must compare many solutions. This requires a team effort by engineers, architects, and services engineers. They will need to examine for particular situations, not just the effect of a given level of protection on the cost of structural members but the building as a whole. Least quantified at present seem the cost repercussion of architectural and services decisions when a given level of seismic safety and damageability is to be maintained. Availability of such data would, I am certain, allow an effective public relations effort to be made by

putting the cost of earthquake protection into perspective in relation to the effect on costs associated with non-structural decisions.

A further task that is likely to take on increasing importance is the evaluation of existing buildings and ways of strengthening them. I am not so much referring to old brick buildings, the bulk of which are probably not worthy of a great investment, but to the many more modern buildings with a long future economic life. For many of these, I believe we will have the unpleasant task of having to advise society to be high seismic risks. We have little choice; the truth will either come from us or the next intense earthquake!

The effectiveness of strengthening methods to achieve reduction in life hazards and even more so of those that aim to minimize damage, are largely unproven. Full scale testing is expensive, so the sooner we start and the more diverse the methods employed, the sooner we are likely to obtain answers to these questions - for this large green shaking table here on which we all live has been ominously quiet in recent years.

Gentlemen, with these few thoughts for the future I would like to close this Conference and to wish you all a pleasant journey home.

CONFERENCE REPORT

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Our 1979 Conference, billed "second regional" but in fact the third such, was as successful, more or less, as each of the earlier two.

The Society has, so far, managed to avoid the dichotomy which plagues many of its overseas counterparts. Having been founded on the initiative of a group of consulting engineers who, in the mid-sixties were meeting regularly but informally for discussion and who had developed a rapport with researchers and academics, it has always appreciated the importance of good communication. Although material for this conference ranged over the whole gamut of topics which interest researchers - zoning, earth sciences, analysis techniques, novel structural systems, response of "floor" mounted units, instrumentation and sociological and political matters - most (but not all) authors were conscious of the value of relating their material directly to the problems that practicing engineers must face.

In 1971 Conference had an educational job to do, or so it seemed to me. In 1975 Conference gave us a chance for talking about the way we were faring in comparison with people in other seismically active regions where design evolution differed from ours slightly but significantly. There was no such theme, conscious or unconscious, for this Conference. It may well be that an occasion for a natural theme of the sort we have known will never occur again. There was little or no controversy of the friendly and enlivening sort that we had in 1975.

So this was a quiet Conference, smoothly organised, no surprises, authoritative papers, predictable discussion, competent chairmanship at every session. I do not think that anyone would have been spurred by anything he learned to hurry back to his office for a reassessment of his design procedures or initiation of new ones. It was not that sort of Conference.

We learned that Indonesia has more rationally based zoning than we have (not too surprisingly, since most of us know that our zoning owes as least as much to politics of the parish pump variety as to science). We were reminded that Japanese experience is greater than is our own (or, for that matter, than is anyone's) and that the Japanese continue, with dismaying frequency, to have severe tests applied to their work.

In a featured address, Professor Paul Jennings of Caltech predicted that future research will be less preoccupied with general principals than research has been hitherto (fundamentals having been established, presumably to everyone's satisfaction?) and more concerned with matters of detail. Refinements to analytical techniques might be justifiable when improved descriptions of site excitation become available. Field observations are needed to complement laboratory studies. At present the more esoteric aspects of this subject seem to have direct interest for people working with nuclear power plant design rather than for designers of ordinary buildings.

Professor Aoyama, from the University of Tokyo, whose contribution was also featured, gave an account of the history of earthquake

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