

Enhancing engineering excellence in Hong Kong through the establishment of an Engineering Tribunal.

Recent tragic events raise questions on the public administration of professional and scientific services. History shows that a Commission of Inquiry or a Coroner's Court often cannot find the real cause of the accident. It often only identifies non-compliance of certain rules except when the commission includes the relevant professionals such as in the Commission of Inquiry into the Rainstorm Disasters 1972. Rules are not necessarily relevant, particularly if the underlying concept of the rules is invalid.

In Hong Kong, this deficiency of the present system has been known for a long time in the administration of engineering issues in public policy. The deficiency is echoed in a recent court case in Italy which has aroused serious concern of the international scientific community. In that case, one government official and six scientists are convicted for failing to forewarn an earthquake in L'Aquila, Italy in 2009 in which some 300 people died. The conviction betrays the court's ignorance of the scientific reality that prediction of earthquake is not yet as mature as that of flooding or river flow.

This paper recommends a course of action that will benefit Hong Kong by the correct use of expert engineering opinion in deciding matters such as legal argument and other aspects of public policy.

Current Practice

In the present system:

1. The Ombudsman does not investigate complaints of unprofessional actions "in respect of which the complainant has or had a remedy by proceeding in court".
2. The Pre-trial Review of a Magistrate Court does not screen out cases of scientifically wrong accusations.
3. The Court makes judgment on contradicting "expert" opinions of the two sides without adequate scientific and engineering knowledge of its own.

The Academy believes that these are deficiencies in the procedures for handling engineering matters in legal and public policy situations.

A previous position paper issued on the occasion of the HKUST Science & Technology Forum held in December 2011 set out three main remedial proposals:

1. Establish a Science and Technology Bureau within the government administration.
2. Engineering and technology to be integrated with policy formulation throughout relevant areas of Government.
3. Set up a high level Engineering Tribunal within the judiciary system.

The third proposal is becoming even more necessary as the numbers of judicial reviews and consequent appeals increase. Two recent (but very different) legal cases demonstrate the dangers of the current approach, where engineering expertise was called upon but not optimally applied.

The Hong Kong-Zhuhai-Macau Bridge

There was considerable controversy over the environmental impact of the Hong Kong-Zhuhai-Macau Bridge project – a technological and engineering issue. In the original judicial review, the court squashed the Government's approval to grant the environmental permits for the two projects in question. Yet the decisions made by the court took no account of engineering matters but were decided primarily on legal and procedural grounds. The court did not have its own engineering experts.

The Court of Appeal subsequently overturned the original verdict, but also only on legal grounds. The Appeal Court judge also implied that normally the court accepts the government's decisions to be technologically and professionally appropriate as the court has no expertise to judge otherwise. Unfortunately, no mechanism exists in the present system that would prevent wrong accusations when such government decisions are inappropriate.

Residential Water Seepage

In what might be seen as a relatively minor matter an owner was successfully prosecuted for non-compliance with a statutory Nuisance Notice to correct water seepage from one flat to another – a problem plaguing tens of thousands of residential units each year in Hong Kong.

This Nuisance Notice was drafted by government officers who did not possess adequate knowledge of hydraulics—the science of water flow-- but nevertheless directed the seepage investigations and the follow-up statutory actions.

Consequently:

- the method of investigation was flawed
- the diagnosis was wrong
- parts of the specified works were irrelevant

Potentially, unreliable investigation such as this goes beyond simply not solving a social problem in the many residential units affected by seepage, but has ramifications for building safety and housing supply.

The owner completed relevant repair work which was not the entire work cited in the Notice, the latter was considered irrelevant to the seepage. After two years of trial and appeal, an initial “guilty” verdict was overturned but, crucially, not on the basis of engineering expertise but, as with the Zhuhai Bridge case, on legal grounds.

On the engineering issues involved in this case, two expert witnesses were involved. One – on the defence side - was a hydraulic engineer. The prosecution's expert was a structural engineer – in other words the same mistake in the misuse of expertise made in drawing up the Statutory Notice was perpetuated during the subsequent legal process. In the event, the appeals judge corrected the mistake in delivering his verdict.

But, since the judge is not in possession of expert knowledge himself (and the basis of the appeal was that the magistrate in the original trial erred in his judgment of the expert advice put before

him) the final decision relied upon legal argument and not a scientific basis. The process clearly exposes the major shortcomings of the current administrative and legal system.

The appeal judgment implicitly held up two fundamental principles of professionalism:

Normal practice is to be followed in undertaking professional work.

Scientific analysis is to be conducted as far as possible to resolve questions and uncertainties.

These two principles are crucial to the pursuit of excellence and thus progress.

Summary of the Academy's Point-of-view and Recommendation.

Based on these two examples amongst others that could be cited, the Academy contends that the Government is deficient in bringing engineering and scientific expert opinion to bear early enough on important matters affecting the public.

The Academy therefore recommends the establishment of an "Engineering Tribunal" as well as a Science and Technology Bureau, to mitigate deficiencies in the administration of relevant matters required by public policy.

Hong Kong Academy of Engineering Sciences

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