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Editorial
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Editorial

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Forensic engineering is substantially concerned with the assimilation and analysis of data from (usually, but not exclusively) unintended events, and then placing this in a public arena such that the lessons may be learnt by the wider industry. The '3Ps' promulgated by Scoss (2007) – people, process and product – is a useful tool to remind us of the spread of influences which we need to consider when looking at the reasons for failure or non-performance. If one considers examples of 'failure' (in performance or the structure itself) it is the first two 'Ps' which tend to dominate.

The desired sequence of learning may originate in three ways. First, voluntary reporting by those involved, recognising the benefit that will accrue to the industry. There are relatively few contemporary examples under this head but the Millennium footbridge (Dallard *et al.*, 2001) and the failure of a counter-weight bridge owned by British Waterways (Cross, 2007) fall into this category illustrating a failure in performance and of the structure respectively. It is hoped that *Forensic Engineering* will steadily build up a stock of papers in this category. A good example occurs in this issue in the first paper (Korff *et al.*, 2011) which is concerned with the leakage of heavy diaphragm wall foundations in Amsterdam. The problem arose from bentonite inclusions and stop-ends, giving rise to leakage and subsequent damage to adjacent historical buildings, the stabilisation of which is described.

The second method of learning is as a consequence of formal or statutory action (e.g. an inquiry or prosecution under the criminal law) although this only occurs in a limited number of specific cases. An excellent example here is the report by the late Jack Chapman on the trial following the collapse of the Ramsgate ro-ro pedestrian walkway (Chapman, 1998). The second paper by Gojo (2011) is a contemporary example and is a salutary reminder of human failing but also an interesting insight into the Japanese building control system. Structural engineering is safety-critical and hence should be subject to appropriate controls, however achieving a proportionate response to the possibility of deliberate actions such as those described requires careful thought.

The third sequence of learning is through data release as a consequence of civil action. The author cannot recall an example under this last head, where the relevant information has arisen directly from the case itself against designers, usually for negligence, and often referred to as a professional indemnity claim.

Unfortunately, the construction industry (in the UK at least) does not have a culture whereby learning opportunities arising from mistake are shared with others for the wider good. There is a natural inclination to suppress information which may cast an organisation, or individual, in a poor light. However it is essential for the good of the construction professions, and the country as a whole, that these situations are analysed, assessed and acted upon. Furthermore, a key difficulty with situations involving civil action is that the parties often agree to (or have imposed) a confidentiality clause which effectively prevents any of the data being known to this wider audience. This is a major impediment. However, information does periodically emerge (Griffiths and Armour, 2009) in a de-identified format, and this can be put to good use in ascertaining either systemic or project-specific reasons for failure or other shortcomings. Scoss has also summarised the findings of others for some well-known failures at http://www.scoss.org.uk/publications.asp.

An analysis of the reports listed by Griffiths and Armour (2009) gives a valuable insight into root causes, many of which are common to a number of examples. Some of these actions result in substantial costs being awarded. Hence appreciating the issues involved is a vital aspect of preventing repeat events. Nonetheless, the periodic release of information through insurance brokers, whilst very welcome, is too intermittent and limited in scope as a single source of information.

A second potential source is the Confidential Reporting Scheme on Structural Safety (Cross) (see http://www.cross-structural-safety.org) which is the subject of the third paper in this issue (Soane, 2011). This paper provides a comprehensive review of the scheme, its outputs to date, and the international interest shown. Although Cross now has an impressive database of safety-related issues, forensic data has a wider base than this and the number of entries which arise from incidents which are also the subject of civil action is likely to be small for the reasons discussed earlier.

How can we improve the situation? Should the parties associated with cases registered with the courts (many of which are settled before actually being considered) be compelled to provide a 'de-identified' expert witness summary

for public use, or perhaps submission to Cross? What do other countries do to circumvent this problem of access to important data? Readers who would like to discuss this topic or any of the papers featured in this issue are encouraged to contact the ICE.

Opening the issue, the first briefing paper (Hackitt, 2011) is a timely reminder of the issues associated with our energy infrastructure as it ends its originally envisaged life, and we seek to extend this for economic reasons. The author gives examples of where failures have occurred in the past and identifies considerations for the future.

The second briefing paper by Lane (2011) is a fascinating report on an historical paper from 1862. Ahead of its time in many respects the paper reinforced the need for comprehensive data and openness in respect of near-misses and accidents. We have come a long way since 1862 but safety on the railways will always be a subject of interest and relevance.

The final briefing paper by Bogle (2011) updates previous guidance published in 1993. It sets out six strategic heads for the consideration of risk, which can then be taken and developed by specific disciplines. It will be on these principles that organisational risk management structures will be built. It links in specifically with the first briefing by Hackitt, but more generally elsewhere.

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