# Editorial

Terwel, Karel

**DOI**
10.1680/jfoen.2017.170.3.111

**Publication date**
2017

**Document Version**
Final published version

**Published in**
Proceedings of the Institution of Civil Engineers - Forensic Engineering (online)

**Forensic Engineering**
Volume 170 Issue FE3

**Editorial**
Terwel

ice | proceedings

**Proceedings of the Institution of Civil Engineers**
Forensic Engineering 170 August 2017 Issue FE3
Pages 111–112 http://dx.doi.org/10.1680/jfoen.2017.170.3.111



ice
Institution of Civil Engineers
publishing

# Editorial

**Karel Terwel** PhD, MSc
Assistant Professor, Faculty of Civil Engineering and Geosciences, Delft University of Technology, Delft, the Netherlands

Forensic science covers a broad area of expertise. Crime scene investigations, inquiries into financial mishaps within a company, investigations into the source of contamination of medical instruments, analyses of airplane crashes and research of structural collapses… At first sight they are very different in nature, but all of these investigations have similarities, for example in their approaches. At Delft University of Technology we acknowledged these similarities, and we have developed a massive open online course (MOOC) 'Forensic Engineering', which explains a method of forensic engineering which can be used for various domains. This MOOC is expected to start on October 17 at edX.org and can be followed for free.

Another example of the breadth of forensic science was the International Association for Bridge and Structural Engineering (IABSE) conference in Vancouver, Canada with the topic 'Engineering the future'. This was attended by various members of the Institution of Civil Engineers (ICE). During the conference, several forensic papers were presented, with subjects including failure case studies, monitoring and issues regarding repair and maintenance. For the IABSE conference that is planned for September 2018 in Nantes, France, two targeted sessions on forensic engineering are foreseen.

This issue of ICE's *Forensic Engineering* journal also reflects the rich breadth of forensics perfectly.

Signor *et al*. (2017) describe an approach by Brazilian Federal Police to determine if collusion had occurred between directors of an oil company and parties of the governing coalition. Over 500 bids for 77 projects were statistically examined, which revealed an unprecedented web of corruption.

The contribution by Taylor *et al*. (2017) also focuses on human and organisational issues associated with failures. By studying a number of major events in high-hazard industries they identified organisational and cultural precursors to these events. These precursors range from leadership, operational attitudes and behaviours to risk analysis and oversight. These factors underline earlier research into human and organisational factors influencing failure – for example, Bea (1994) and Terwel (2014). The insights are not only relevant for high-hazard industries but also for the construction industry. A set of questions was developed to profile organisational risk management resilience of organisations. Hopefully, in this way the valuable lessons from this research can be used to decrease the probability of future disasters.

Geotechnical failures are an important area within forensic engineering (see e.g. Sivakumar Babu (2016)) especially in countries with soft soils, like the Netherlands. Korff (2017) presents a number of Dutch failure case studies from deep excavations and tunnel projects. Based on risk management principles and insights from the theory of learning, the author proposes approaches to learn from these failures.

Finally, Baker *et al*. (2017) explain factors that influence the decision to demolish or adapt an existing building. They focus on five case studies, where factors like heritage value, architectural significance and building condition are included. This assessment of the condition of existing buildings is a relevant field of expertise within forensic engineering, where knowledge of past building codes and practices, together with a clear understanding of structural behaviour, is of utmost importance. Authors are encouraged to come up with case studies and approaches for this relevant structural condition assessment, which fits neatly within the scope of this journal.

Several times, I have heard people stating that we should learn more from other industries. This issue of *Forensic Engineering* actually enables us to learn from other domains, and provides lessons to avoid similar failures in future. Every reader is challenged to decide for themselves to what extent the highlighted lessons can be implemented in their own daily practices.

## REFERENCES

Baker H, Moncaster A and Al-Tabbaa A (2017) Decision-making for the demolition or adaptation of buildings. *Proceedings of the Institution of Civil Engineers – Forensic Engineering* **170(3)**: 144–156, http://dx.doi.org/10.1680/jfoen.16.00026.

Bea RG (1994) *The Role of Human Error in Design, Construction and Reliability of Marine Structures*. Ship Structure Committee, Washington, DC, USA, report no. SSC-378.

Korff M (2017) Learning from case studies and monitoring of Dutch tunnel projects. *Proceedings of the Institution of Civil Engineers*

– *Forensic Engineering* **170(3)**: 134–143, http://dx.doi.org/10.1680/jfoen.17.00007.

Signor R, Love PED, Olatunji O, Vallim JJCB and Raupp AB (2017) Collusive bidding in Brazilian infrastructure projects. *Proceedings of the Institution of Civil Engineers – Forensic Engineering* **170(3)**: 113–123, http://dx.doi.org/10.1680/jfoen.17.00013.

Sivakumar Babu GL (2016) Briefing: Forensic geotechnical engineering. *Proceedings of the Institution of Civil Engineers – Forensic Engineering* **169(4)**: 123–126, http://dx.doi.org/10.1680/jfoen.16.00025.

Taylor R, May J, Weyman A and Carhart C (2017) Understanding organisational and cultural precursors to events. *Proceedings of the Institution of Civil Engineers – Forensic Engineering* **170(3)**: 124–133, http://dx.doi.org/10.1680/jfoen.17.00006.

Terwel KC (2014) *Structural Safety: study into Critical Factors in the Design and Construction Process*. PhD thesis, Delft University of Technology, Delft, the Netherlands.