

Briefing: Temporary Works Forum: how history and narrative shaped a major safety initiative

Bill Hewlett MA, CEng, FICE, FIET

Chair 2009–2017, Temporary Works Forum, London, UK
(bill@billhewlett.co.uk)

The Temporary Works Forum was founded to give a place for professionals to come together and share their experience and learning about temporary works. 2019 marked its 10th anniversary. In this article, the founding chair reflects on why he, and the founding secretary, launched the Forum, and draws lessons from its success: an understanding of historic context and a respect for narrative are considered to have been vital, building on a sound base drawn from the philosophy of science. As well as giving insight into temporary works as a subject, the article challenges where else initiatives of this kind would add value to the engineering profession

1. Introduction

In October 2019, the Temporary Works Forum celebrated its tenth anniversary with a prestige seminar and reception for its 182 member companies and their guests at the Institution of Civil Engineers (ICE) in London (ICE, 2020).

At its beginnings, TWf had just 15 founder members and met in borrowed offices. At the 10-year point, it was filling arguably the most prestigious engineering venue in the UK, with a 12-fold growth in membership. This presence and broad engagement positions TWf as a huge force for construction safety.

Over its 10 years, TWf has met for an open and frank discussion every quarter without fail, with a packed house. It has branches across the UK, and sister organisations have sprung up in Hong Kong and the Middle East. Authoritative guidance (free to all on its website, TWf (2020)) has been published on a dozen and more subjects, and two of TWf's guides have been developed by BSI as Publicly Available Specification or PAS documents. TWf has been able to sponsor a Centre of Excellence in Temporary Works and Construction Method Engineering at City, University of London, where a dedicated MSc is now taught. Research has been sponsored at both City and other universities. TWf has enjoyed the support of the Health and Safety Executive (HSE) from the outset.

John Carpenter was the founding secretary, and together he and Bill Hewlett, the founding chair, were asked to speak at the seminar in October about the origins of TWf in 2009. This briefing sets out the rationale that John and Bill followed, which was strongly influenced by narrative, history and philosophy.

The broader audience reading this briefing should be asking themselves: in what other spheres of hazard or industry can the same sort of rationale be applied? Where else will live narrative, which is historically and philosophically informed, enable controlling hazards with a similar effect?

2. What are 'temporary works'?

In the context of TWf, 'temporary works' has quite a specific meaning: they are the temporary structural supports and other provisions needed during the building, modification and demolition of assets in the infrastructure and construction sectors; refer to BS 5975 (BSI, 2019). Things such as falseworks to support bridges during construction, formwork into which concrete is poured and sheet piling for temporary excavation support are all temporary works. The subject hit the headlines in the 1970s due to a spate of collapses during the motorway construction boom, leading to the Bragg report (HSE, 1976) and the first edition of BS 5975 (BSI, 1982).

3. The need for TWf

The need for a body of some kind to give a lead and focal point for all those involved in temporary works was spotted independently by John and Bill. At the time, John was the secretary of SCOSS, the Standing Committee on Structural Safety (Structural-Safety, 2020). The committee had seen a rise in the number of temporary works incidents and was keen to see the industry react positively. Bill's motivation was a growing frustration that engineering institutions seemed to give little recognition to temporary works, even though the structural engineering can be every bit as significant as that for permanent works: there was no dedicated teaching and little if any research, there was no temporary works question in the Institution of Structural Engineers (IStructE) exam and there were no specific industry prizes. More significantly, though, both John and Bill were picking up that engineers and managers coming into the industry did not seem to think that structural failure was a real possibility, and they were giving temporary works less attention than those with longer memories.

4. Shaping the proposition

When John and Bill started to evolve the idea of TWf, many engineers came forward with ideas. Points that emerged included the following.

- This is timely: think about generational forgetfulness (e.g. Sibly *et al.*, 1977, 1978). Memories of the temporary works failures of the 1970s will be fading and need refreshing (since 2009, Brady (2013) and Petroski (2012) have reinforced this line of reasoning).
- Encourage narrative and storytelling (see also the book by Weick and Sutcliffe (2015)); promote peer learning.
- Maintain high professional standards; act in the public interest and avoid commercialism.
- Engineers should give themselves space by being clear why a new body is needed.

5. Generational forgetfulness

The first of the aforementioned points resonated strongly with Bill. He recalls specifically: ‘I had started my career in the early 1980s and the collapses of the 1970s were in the active memory of my older colleagues. Although I had not witnessed any failures personally, their experiences were harrowing and vivid. One of my foremen was at Birling Road on the day it collapsed [Figure 1]; his account made a lasting impression on me’.

The learning from these events led to the Bragg report in 1975 and the innovative British standard BS 5975 in 1982. The British standard sets out design rules and importantly a management regime for temporary works. The change to the industry at the time was dramatic and has proved lastingly beneficial. However, over the 30 years to 2009, with very few failures occurring, the recognition of the level of hazard from temporary works was being lost. While management regimes were kept up, the awareness of why, and the consequent attention and care, was waning. Hewlett *et al.* (2014) explored this further.

A key driver for TWf was to keep memories fresh, to re-emphasise the scale of hazard that structural temporary works represent and thereby maintain mindfulness in management. In this regard, TWf has been successful: there has been no re-emergence of the sorts of



Figure 1. Birling Road, UK, collapse in March 1971 (HSE, 1976)

collapses of the 1970s, and synergy between TWf and other bodies such as the IStructE has hugely raised awareness (see e.g. the series of articles by IStructE (2016–2018)). Any tide of generational forgetfulness has been pushed back.

6. Narrative and storytelling

In regard to narrative and storytelling, John and Bill looked back to the foundation of the ICE. The record is of eight young engineers getting together to share their experiences and learning (see e.g. the book by Watson (1988)). Being based in narrative, their activity was of its day, up to date and current; they established the principles of the institution as a learned society. From this, the oldest and longest-standing professional engineering institution was born.

Personal experience was also relevant: as stated earlier, it was the accounts from colleagues of the 1970s collapses that had shaped Bill’s respect for the hazards involved and how easily the causes of failure can creep in.

Both John and Bill were aware also of how no two engineering situations are ever quite the same, so if experience is to be shared to form the basis of engineering judgement, a richness of communication is needed so that what is learnt can be reinterpreted in new contexts. Narrative is required, and the storytelling evokes the human factors, so often key to accidents.

7. Professional standards

Again, John and Bill looked to the model of professional engineering institutions. Their longevity has required them to be continuously relevant, and this again promotes a forum at which the concerns of the day can be discussed. It also required a good standard of debate, so that the range of views are heard fairly and openly, in a climate of learning not judgement. Lastly, a high professional standard demands that records and outputs are of a high quality. This ‘right-first-time’ approach can slow initial progress but, as for Aesop’s tortoise, is ultimately beneficial.

Safeguarding these aspects of TWf not only called for good meeting management but also led to a formal secretarial position to ensure quality. To date, TWf has kept clear of any legacy of disputes or other claims that suck in resources and drag an organisation down. On the upside, the insistence on quality has attracted new members, retained old ones and positioned TWf as the go-to organisation for authoritative advice. That TWf is commercially independent and not-for-profit reinforces its authority. It was remarkable that within 2 years of TWf’s formation, the HSE, clients, BSI and others started to come to seek advice. None would now dispute that TWf is ‘a part of the landscape’.

An early commitment, which has been stuck to, is that all publications from TWf are openly available free to all (TWf, 2020).

8. Independent body

That temporary works are distinct from permanent works, or at any rate that those involved with temporary works warrant an independent body, is a moot point. It is a question to which approaches developed in the philosophy of science can be usefully applied.

One argument is that temporary works are structures as permanent works structures are, just short-lived. The same laws of physics apply. No new body is required.

John and Bill took a different view, not because they particularly wanted to form a new body, but from empathy with the people who work in temporary works and seeing that it is through these people that the public good will be served. It seems probable that very similar arguments were put forward when the Institution of Mechanical Engineers and other bodies differentiated themselves from the ICE in the nineteenth and early twentieth centuries.

The argument (in 2009) ran like this.

- Design. Structural analyses used to design temporary works are not strongly distinct from those for permanent works, but a range of factors (TWf, 2013) lead to very different uses of the underlying science and design codes. The differences call for different approaches in the analyses so as to address the different governing effects and different heuristics. For instance, temporary works are stressed almost to the limit in the serviceability condition, are often very light in comparison with their load, details are more significant to the overall stability and temporary works are often designed on the basis of immediate need from available kit.
- Knowledge. What is and can be known in temporary works engineering has quite a specific character. Practical solutions are vital, and this calls on learning from practical experience and narrative, not learning from theory. Communication of how something is to be built is as important as communication of what is to be built, and much communication is with people who are intensely practical but lack formal engineering training. Few if any other professions are involved. There are often extensive unknowns and heuristics, but the need for a safe while economic solution is absolute.
- Ethics and lived experience. While the professional ethics of care for others overarches both permanent works and temporary works, the broader implications of ethics (self-fulfilment, self-actualisation) for a temporary works engineer calls on satisfaction more in the action of engineering as part of a construction team. 'Being a temporary works engineer' is likely to differ markedly from 'being a permanent works engineer': the design activity is different, construction phase success is everything, work colleagues and environment are different and the business prerogatives and responsibilities are completely different.

On these counts, John and Bill considered that an independent TWf had its place, and in the event, they have been proved right. Other bodies have accepted and partnered with TWf, inspiring new synergies and bringing new value to UK engineering. There have been no wasteful turf wars.

9. Where next

What is next for TWf is for the present directors to decide. One observation is that the design context of temporary works is becoming more akin to that of permanent works, with independent design bureaus replacing contractors' own design offices; this may warrant a change of tack.

However, a question for readers will be about what other types of activity warrant an approach of this kind. The answer will lie where generational forgetfulness presents a rising risk and where drawing this to the attention of currently existing bodies will not meet the case.

The positives of what TWf has achieved are huge, and while some hard work was required, there is satisfaction in seeing one's ideas and creations prosper. John's and Bill's thanks go to the present directors and members of TWf who continue the cause and the many people along the way who have made this possible.

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