Editorial

Bill Addis MA (Cantab), PhD

Visiting Professor, Higher Technical School of Architecture, San Sebastian, Spain (bill.addis@cantab.net)

To what extent can an international journal address the very national subjects of history and heritage? Both history and heritage form an intimate part of national identity. We all learn about them at school, and what we learn differs greatly according to where the school is. Thus, in England, we focus on the birth of the factory system, the development of the steam engine and creation of the railway network. So too, our engineering and construction history devotes much attention to the development of the new types of construction, especially involving iron, that made these important components of our identity possible. On the other hand, the engineering history of reinforced concrete in England is much less prominent than in France, Germany, Italy, Spain and the USA; each of these countries has its own construction history, with its own iconic concrete structures and its own engineering heroes. All of the books on the history of concrete that I know focus largely on the structures, engineers and events in one country.

A similar, perhaps stronger nationalism pervades the world of heritage, for this world embraces not only the physical structures themselves but also the economic, social, political and often military histories in which they were created, and which have often led to their survival and their perceived cultural value.

Despite these nationalist influences, the last few decades have seen a growing internationalisation of both engineering history and heritage. The first International Congress in Construction History was held in 2003 in Madrid (Spain); the next four, in Cambridge (UK), Cottbus (Germany), Paris (France) and Chicago (USA), will be followed by Brussels (Belgium) in 2018 (see <http://www.constructionhistorysociety.org/6icch/>). In the world of heritage in the built environment, the International Council on Monuments and Sites (ICOMOS) was formed in 1965 and now has national committees in 106 countries and 28 International Scientific Committees (see <http://www.icomos.org/en/>). Of particular relevance to the conservation of existing structures is the *ICOMOS Charter – Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage* (ICOMOS, 2003).

A number of international organisations are of particular relevance to engineering heritage and the engineer's work on conservation. The International Committee for the Conservation of the Industrial Heritage (see <http://ticcih.org/>) was founded in 1973 after the first International Conference for the Conservation of the Industrial Heritage held in Ironbridge, England in 1973. In 2003, ICOMOS set up a the International Committee on the Analysis, Conservation and Structural Restoration of Architectural Heritage, which has published *Recommendations for the Analysis, Conservation and Structural Restoration of Architectural Heritage* (ISCARSAH,

2014). The organisation Structural Analysis of Historical Constructions was formed principally to run conferences and its tenth international conference was held in Leuven, Belgium, in 2016 (see <https://kuleuvencongres.be/sahc2016>).

Within the International Association for Bridge and Structural Engineers, Working Group 9: Construction History (IABSE WG9) was formed in 2013 (IABSE, 2017). It has the following three main objectives.

- To increase awareness among structural engineers of historical and cultural aspects of structures and structural engineering
- To illustrate and propagate the social and technical achievements of civil engineering
- To improve methods and practice in structural engineering by showing ways for systematic and targeted integration of historical and cultural aspects in intervention projects to adapt or modify structures of cultural value for future demands.

IABSE WG9 is currently compiling a publication on the importance of construction history in the restoration of existing structures, including a large number of case studies.

At a more technical level, the Eurocodes have served to align the way engineers in the European Union address the design of new structures; however, they contain little direct relevance to assessing the structural performance of existing structures. The only international guidance in this area is to be found in ISO 13822:2010, 'Bases for design of structures: assessment of existing structures' (ISO, 2010).

Of course, at the level of detailed construction, existing structures in one country differ from those in other countries, whether they are Gothic cathedrals, wrought-iron girder railway bridges or reinforced-concrete structures from the interwar period. Each was designed using different codes and constructed with materials and components having different specifications, using local methods of construction, and meeting local construction regulations.

So it is worth asking the question: what knowledge or experience gained in one country would be of interest or of use to engineers in another country? This is a question of great importance to *Engineering History and Heritage*.

It has been a long tradition in the Proceedings of the Institution of Civil Engineers to share experience with fellow engineers. Reporting on unusual methods of construction encountered during restoration can help build up an information resource for use by

any members of the profession, although some of this information may be of less interest across cultural boundaries.

On the other hand, case studies and accounts of conservation projects are often of interest to engineers in any country, especially when authors share both technical and managerial difficulties that arose, and how they were solved or might be avoided in the future.

In principle, the more scientific aspects of the engineer's work should be more transferable from one culture to another, since the behaviour of structures and techniques for assessing existing structures depend on statics and material properties, not local construction methods and industry practices. However, even these practices can be resisted when pre-Eurocode structural science and approaches to analysis pervade engineering firms and the educational culture of different countries. Fortunately, over many centuries, engineers have regularly looked across national borders and used the different approaches to their art that they have discovered to enlighten their own work. This is what Villard de Honnecourt did in the thirteenth century, and what many engineers do today in their collaborations on all types of

international projects, as well as exchanges and collaborations within in the academic world.

REFERENCES

- IABSE (International Association for Bridge and Structural Engineers) (2017) *WG9: Construction History*. See http://www.iabse.org/IABSE/IABSE_Association/Committees/Technical_Groups/Working_Groups/WG_History/IABSE/association/Committee_files/Technical/WG/WG_History.aspx?hkey=2a844436-e083-4731-a952-d6ea68182b46 (accessed 27/03/2017).
- ICOMOS (International Council on Monuments and Sites) (2003) *ICOMOS Charter – Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage*. ICOMOS, Paris, France. See <http://www.icomos.org/en/about-the-centre/179-articles-en-francais/ressources/charters-and-standards/165-icomos-charter-principles-for-the-analysis-conservation-and-structural-restoration-of-architectural-heritage> (accessed 27/03/2017).
- ISCARSAH (International Scientific Committee for Analysis and Restoration of Structures of Architectural Heritage) (2014) *Recommendations for the Analysis, Conservation and Structural Restoration of Architectural Heritage*. See <https://iscarsah.files.wordpress.com/2014/11/iscarsah-guidelines.pdf> (accessed 27/03/2017).
- ISO (2010) ISO 13822:2010. Bases for design of structures: assessment of existing structures. ISO, Geneva, Switzerland. See <https://www.iso.org/obp/ui/#iso:std:iso:13822:ed-2:v1:en> (accessed 27/03/2017).