Editorial

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In Britain, there are around a dozen masters or post-graduate courses – most of them part time – devoted to building conservation (see <http://www.buildingconservation.com/directory/courselist.php?category=Postgraduate+courses>). These are generally aimed at architects, building surveyors and building craftsmen and women. None of them are aimed at building or civil engineers and the engineering content of these courses is, at best, minimal and often absent.

In the field of Continuing Professional Development (CPD) courses devoted to conservation issues and extending the life of existing structures, the situation is a little better. A brief internet search for courses for engineers found a few (e.g. IHBC, 2016; Glasgow City Heritage Trust, 2016; West Dean College, 2016), although my searches of the Institution of Civil Engineers (ICE) and the Institution of Structural Engineers websites revealed none. As with full-time courses, CPD courses are generally aimed at architects, building surveyors and building craftsmen and women; and all of them focus on buildings, with no mention of other engineering structures such as bridges and canals.

There is also the issue of the professional status of engineers and recognition of their skills and experience. In Britain, the Conservation Accreditation Register for Engineers (Care) identifies civil and structural engineers skilled in the conservation of historic structures and sites, which was the subject of an Editorial in *Engineering History and Heritage* by Jon Avent, the current chairman of Care (Avent and Addis, 2014). However, Care does not require any specific qualifications in the conservation field – accreditation is based mainly on project experience. For more information on Care, please visit the Specialist Professional Registers page on the ICE website (ICE, 2016).

The situation is not as bad in some other countries; many universities in German-speaking countries offer masters courses in conservation and *Denkmalflege* (care of historic monuments) and these often have significant engineering content related to, for example, masonry, timber and reinforced-concrete structures (e.g. see <https://www.b-tu.de/fg-bautechnikgeschichte/>). Now, I do not know what proportion of civil and building engineers are actively working on extending the life of existing structures, nor what proportion, by value, of the construction engineering sector is devoted to such work. Even if it is no greater than 20%, this is a significant proportion. So, why is there so little evidence of courses for engineers engaged in conservation and extending the life of existing structures?

One answer, which is nowadays often emphasised in the education of undergraduate engineers, is that engineers should be able to tackle problems ‘from first principles’. Faced with a structural problem in a cathedral, a 19th century cast-iron bridge or a reinforced-concrete building from the 1920s, a good engineer – even with no experience of working on existing structures, so the argument goes – should be able to solve the problems from first principles. There should be no need for specialist knowledge of mediaeval masonry construction, the technology of cast iron or the reinforcing systems used in the 1920s in order to undertake a satisfactory assessment of the structure and to propose a suitable remedy to the problem. All that is important is the current condition of the structure and its materials; its precise history is now irrelevant. To some extent, this may be true, and many repairs and refurbishments on existing structures have been completed by such engineers. However, most engineers engaged in such work would argue that a good knowledge and understanding of the construction of existing structures and the materials of which they are made is almost essential.

Another answer, perhaps, is that nowadays engineers cannot afford the time to prepare themselves for possible future projects by investing in higher education or CPD courses. Rather, engineers rely on rapidly learning new skills or finding information when they actually need them.

There are, fortunately, some good books available to those who seek help (e.g. Graham, 2002; Holzer, 2013, 2015; also reviewed in *Engineering History and Heritage* (Addis, 2015)). However, as engineering practices pare their libraries down to a minimum, books – especially those that are a few years old or out of print – are becoming less easy to find when they are needed.

Over the last year or so, I have been compiling a new section on the ICE website to try and address some of these issues. The Conservation Information Resource for Civil Engineers is now live and will continue to grow over the coming months (Addis, 2016). I am preparing a paper on this resource for the next issue of *Engineering History and Heritage*.

At *Engineering History and Heritage*, we would like to hear the view of readers in any country on education and CPD for engineers working on conservation and extending the life of existing structures – either regarding opportunities that are already available, or about what sort of education and CPD could and should be offered.

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