

Adding value through innovation in structural design: 3 – Creativity and innovation in building structures

Lee Franck CEng MStructE

Senior Structural Engineer, Guy Nordenson and Associates, New York, USA

Contact: lf@nordenson.com

Abstract

This paper is part of a series on the subject of adding value through innovation in structural design – the theme of an open forum discussion seminar organised at the conference by the Institution of Structural Engineers.

It explores different routes which can lead to creativity and innovation in building structures. It also identifies key drivers and enablers of innovation and the wider design philosophy that is needed for it to flourish.

Keywords: innovation; creativity; new materials and fabrication techniques; cross industry transfer of knowledge; collaboration; communication; mentoring

1 Introduction

Before exploring what we mean by innovation and the different routes to achieve it, let's start by asking the question why it is so important we talk about innovation in the structural engineering profession. There is no doubt that our profession has undergone rapid changes and will continue to do so, a change which is marked by technological advancements and globalization. Technology is allowing us to free ourselves of the most mundane tasks; however it also poses the thread of designing ourselves out of our jobs if we don't position ourselves correctly. There is more and more competition at a global level and work can be done remotely and shipped electronically at a lower price. At the same time we are faced with a skills shortage which puts at risk future economic development as well as tackling future challenges.

If we want to attract the best and brightest young people into our profession and also retain them, we must become more visible and attractive as a profession by showing leadership and innovation in solving our most pressing global challenges. If we don't, we accept taking on a supporting role in

building the future, a role which faces the risk of being commoditized by machines or replaced by cheaper labour that can be produced elsewhere in the world.

Then let's move on to discuss what we actually mean by innovation. Most of us will probably have our own personal definition of what innovation in structural engineering means to us. A description I read recently in the *Structural Engineer* [1] resounded well with my own thinking by defining innovation as "the successful delivery or application of something novel that delivers useful value or benefit to project stakeholders". What I liked is the focus on it not only needing to be novel, but also needing to deliver value, hence having a purpose. As engineers we tend to often focus on what we do and to a certain degree on how we do it; rarely we focus on why we do it and what the wider underlying goal is we are trying to achieve.

I can observe that many structural engineers have the desire for meaning, the ambition to contribute to society in a more profound way. To do so, we must evolve by becoming more global in our thinking, more collaborative, communicative and innovative. In this paper and during the conference