Innovation in the Built Environment

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Construction Innovation

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Finn Orstavik has his doctoral degree in sociology from the University of Oslo (1996). He is specializes in innovation studies and has early in his career done historical studies of military research and development and private sector innovation in digital computers in Norway. His later research covers empirical and historical studies of industry development, the institutional system of innovation and innovation policy. His theoretical interests span Giddens' structuration theory, general systems theory, Luhmann's theory of social systems, innovation theory and American pragmatist philosophers (e.g. Dewey, Mead, Follett). He has studied innovation and knowledge

processes in the construction industry over a period of 10 years and has published studies amongst others on industrial clusters, innovation systems and innovation in Norwegian house building. Orstavik has been Research Director of the Centre for Regional Innovation and teaches master level courses on Innovation and Leadership and Innovation and Globalisation at the University College in Buskerud and Vestfold in Norway.

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Martin Sexton has been Principal Investigator and Co-investigator on numerous Engineering and Physical Science Research Council, Economic and Social Research Council and European Commission awards totalling in excess of £7 million. He is recognised internationally for his research in the area of innovation management, particularly in the contexts of small construction firms and knowledge-intensive professional service firms. Martin is currently focusing on transition management for sustainability, environmental innovation, energy systems and the impact of regulation on innovation. Martin was formerly the Joint Co-ordinator of the CIB Working Commission 65 – Organisation and Management of Construction.

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Foreword

Members of the CIB community worldwide are proud of the contribution that they collectively make to creating and maintaining a better built environment. They are aware of the challenges that the construction industry faces and the important role that innovation plays in realising powerful solutions. Nevertheless, despite the strong interest, agreeing on a simple definition and an approach to measuring innovation remains elusive. CIB members may feel that the innovation construct is both complex and nebulous, and disagree about questions as fundamental as whether the industry is innovative or not. However, one thing that all agree upon is that we need to know more about the innovation phenomenon. It was for this reason that I was keen to endorse the idea of creating a CIB Task Group titled 'Recognising Innovation' in Dubrovnik in 2009.

During its lifetime the group and its members were a vibrant presence at CIB events. Amongst other activities, they hosted debates, conducted scenario workshops and ran special paper tracks. Not least importantly they announced the idea of publishing this book. Here they have coalesced many of the perspectives emerging through the efforts of the group, along with those of other leading scholars in the construction innovation field. The result is a presentation of an eclectic and informative set of perspectives that sheds light on innovation and its importance in realising our aspirations for the built environment.

On behalf of CIB and our membership, I am very pleased to endorse this publication. It is a thought-provoking and valuable contribution to research on innovation in the built environment. I am confident that it provides important insights for anyone wishing to understand, to do research on or to effectively manage innovation in or adjacent to the construction sector.

Dr. Wim Bakens
Secretary General, CIB

Preface

The origin of this book lies in the work of an international collaborative task group convened by the International Council for Research and Innovation in Building and Construction (CIB), and the development of ideas have been enriched by a research project on knowledge processes in construction carried out through the years 2007–2012 with financing from the Research Council of Norway and industry partners. The CIB Task Group 76 explored the ways in which innovation was recognised and measured in the construction industry. It brought together diverse perspectives on innovation in the built environment in order to understand the multiple ways in which the term has been mobilised and deployed in construction research and practice. Over three and a half years, the group provided a forum for critical debates, workshops, and special paper tracks, through which a range of divergent meanings and implications of innovation were revealed. This book coalesces some of these perspectives with those of other scholars within the construction innovation field. It has been written to stimulate new debates in construction innovation within the research and practice communities and to inspire reflection on the ways in which innovation can be considered and ultimately capitalised on for the benefit of organisations and society at large.

As the editors of the volume, we wish to thank all the excellent scholars who have contributed to the book in such a positive and insightful way. We also wish to thank our friends in Wiley Blackwell who have encouraged and supported this project all the way from inception to completion. We hope that this book provides some thought-provoking insights that will inspire future research and scholarship into the ways in which we study, recognise, and encourage innovation within the construction sector.

Finn Orstavik, Andy Dainty and Carl Abbott
May 2014

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Introduction

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Historically, two very different and yet inseparable impulses have shaped modern business: a quest for more efficient production and the pursuit of competitive advantage through novelty and innovation. Production is typically carried out in enterprises whose survival depends on offering goods and services for which alternatives may be available from a range of competing suppliers. To survive and flourish under such circumstances, enterprises have to make efforts, for example, to reduce prices (by avoiding waste and increasing productivity) and/or to create novel value propositions (by innovating). Although these fundamental agendas are certainly not mutually exclusive, embracing innovation encompasses much more than addressing production and distribution inefficiencies. In his early theory on economic development, the Austrian-American economist Joseph A. Schumpeter suggests that what really counts is the competition from new commodities, new technology, new sources of supply, and new types of organization (Schumpeter 1983). Unlike gradual efficiency improvements, he reiterates in a later work, that innovation 'strikes not at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives'. If price competition is comparable to forcing a door, then innovation is more like bombardment, he proclaims (Schumpeter 1976).

However, to succeed in *realizing* innovations is difficult, 'first, because they lie outside of the routine tasks which everybody understands' and 'secondly, because the environment resists in many ways that vary, according to social conditions, from simple refusal either to finance or to buy a new thing, to physical attack on the man who tries to produce it' (Schumpeter 1976). Even though Schumpeter saw that innovation-based competition was becoming institutionalised as 'technological progress is increasingly

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becoming the business of teams of trained specialists who turn out what is required and make it work in predictable ways', he still maintained that the resistance to innovation based on economic interests vested in the established order would never go away (Schumpeter 1976). Accordingly, when considering construction and the production of the built environment in modern societies, he in the same text noted that vested interests and the weight of tradition in a very significant way stifled innovation, representing 'the great obstacle on the road toward mass production of cheap housing which presupposes radical mechanization and wholesale elimination of inefficient methods of work on the plot'.

As pointed out by Loosemore in Chapter 5 in this volume, a simple linear model of innovation has often dominated thinking about construction innovation in public policy, in academic institutions and in industry organizations and firms. In this linear model, results from scientific research and technological development are supposed to feed into commercial activities and drive industrial development and growth (Stokes 1997). This model of innovation is seen by many as inextricably linked to Schumpeter's theories and his notion of the entrepreneurial function in capitalist economies (Pavitt 2005). Arguably, this model forms a set of implicit premises when it is contended that the construction industry has a troubled record of innovation for growth and competiveness. This is a recurring theme in the literature on construction. The problem is seen as a lack of willingness to adopt novel results from scientific research and technological development, and even more generally, an inability or unwillingness to learn (e.g. Egan 1998; Lepatner 2007).

Several recent contributions have, however, problematized this view and have pointed out the importance of recognising the varied nature and effects of innovation. For example, in their comprehensive work on the management of innovation, Tidd and Bessant (2013) espouse a process view of innovation, one of 'turning ideas into reality and capturing value from them' (p. 21). They see innovation as far more than the generation of new ideas. Innovation also encompasses the need to carefully select the ideas with potential, to implement them and to capture value from them. Process-oriented research on innovation, such as documented in contributions by Van de Ven et al. (1989, 1999), also shows that innovation does not follow linear pathways and is generally marked by ambiguity and discontinuity. Innovation is often very costly in part because organizations have to reframe their approach to reflect the new circumstances that result from the innovation efforts themselves. Beyond this, innovators and those affected by innovation will also learn to anticipate effects. Hence, reflexivity enters into innovation processes, which means that actions and decisions can be understood only contextually and in a temporal framework. All this serves to emphasise the need to consider innovation as a complex phenomenon and to develop alternatives to the simple linear model that has dominated much of the innovation discourse. Much remains before innovation in construction is adequately understood, and so different standpoints and models should be explored in research.