

Call for Papers

Transforming Construction: The multi-scale challenges of changing and innovating in construction

Guest Editors:

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Scope

Today's unprecedented rate of global urbanisation and population growth (United Nations, 2019), climate change and pandemics are putting renewed attention on built environments and their development. The necessary rapid development and transformation of the built environment require that the construction industry delivers more value, efficiently, safely, and at a higher standard, within the constraints of limited economic, social and natural resources. This comes at a time when the industry struggles to deliver projects on time and budget (Denicol, Davies and Krystallis, 2020), recruit and retain talent (e.g. Farmer, 2016), and embrace digital transformation (McKinsey Global Institute, 2017; Whyte, 2019).

Concurrently, we are seeing significant external investments in the construction industry, and new technologies are emerging rapidly that can deliver novel value propositions for construction clients. Anticipated outcomes, such as the industrialisation and digitalisation of the construction industry, threaten to erode the competitive position and viability of incumbents (Christensen, 1997; Gans, 2016; Pullen, Hall and Lessing, 2019). A conservative and fragmented construction industry has a reputation for being slow to adopt and integrate new technologies at scale (explored by many, including Winch, 1998; Gann, 2000; Slaughter, 2000; Sheffer and Levitt, 2010), resisting attempts to deliver the promises of the fourth industrial revolution (Schwab, 2017).

Stimulated by these challenges, newcomers, and – in places – Government intervention, construction is nevertheless undergoing a period of transformation, with organisations (both incumbents and new entrants) developing and implementing new technologies and delivery models. This changes how construction is conducted, the industry itself, and how we define it. Thus, research is needed to explore this disruption, innovation and change in construction, both in practice and in theory (Chan, 2020). These phenomena have attracted great academic interest over the years, reflected in numerous books on the topics (e.g. Manseau and Shield, 2005; Orstavik, Dainty and Abbot, 2015; Havensid et al., 2019). However, as the empirical evidence base continues to grow apace, the ongoing restructuring provides an opportunity to explore new facets of disruption, innovation and change in this particular setting. And, while researchers around the world are exploring the changing construction contexts to address local and global challenges (Jansson, Johnsson and Engström, 2014; Aitchison, 2018; Hall, 2018; Bygballe and Swärd, 2019; Pan, Chen and Zhan, 2019; Worsnop, Miraglia and Davies, 2016), the development and application of new theories has been limited (Schweber, 2015).

Following discrete explorations in construction (e.g. CME 2014 (Volume 32, Issue 6), BR&I (2008) (Volume 36, Issue 3), innovation and transformation (e.g. PMJ 2019 Volume 50, Issue 2) and related disciplines (e.g. PMJ 2016 Volume 47, Issue 2) in other special issues, we invite researchers to use this unique moment to revisit the theoretical foundations of construction research, and to develop and apply theories and methodologies that help describe these changes at multiple levels, and to guide practice (Pan, Gibb and Dainty, 2012; Gans, 2016; Bresnen, 2017; Harty and Leiringer, 2017; Dainty and Leiringer, 2019; Eklund and Kapoor, 2019).

Format

This special issue acts as a provocation for new perspectives on transformation. It hopes to revisit, re-evaluate and re-invent how we conceptualise both construction and construction research. This could be through the development of innovative descriptive, analytical models of construction, middle-range theories, or innovative methodological approaches that help us better understand the challenges we face.

In this call we are seeking submission of novel conceptual papers, and empirical papers that advance our theoretical understanding of the transformation and industrialisation of the built environment.

While normative descriptions of construction have been on the agenda for some time, we want to hear from researchers with perspectives on what 'is' happening, rather than what 'should' happen. So contributions to this Call for Papers should present descriptive theories that reconcile or bridge theory and practice (Dainty and Leiringer, 2019; e.g. Turk and Klinc, 2019), ensuring the rigour-relevance balance (Bresnen, 2017), or integrate insights on transformation from other industries and disciplines (e.g. Eklund and Kapoor, 2019). Literature reviews summarising and reconceptualising the challenges of transformation and establishing new research agendas will also be considered (Zhang et al., 2019).

There are, of course, many notable contributions to construction theory, with Levitt, Winch, Green, Schweber, Gann, Whyte, Koskela, Bresnen, Davies and others making significant contributions to the debate. These authors provide welcome theoretical perspectives on specific aspects of construction to which this special issue hopes to add.

Scope

The editors of this special issue welcome papers developing and applying theory exploring the transformation of construction at the following scales, noting some of the motivators that are stimulating change. Each scale is followed by non-exhaustive examples of areas that might be explored.

Researchers may wish to explore transformation across these scales; for example, how the rise of physical and digital platforms in construction might offer up new ways of conceptualising the products and processes of construction at firm, project and/or industry scale. Papers may take a local, regional or international view – there is also scope for research that compares construction transformation in different geographies.

Industrial Transformation:

- How do we describe the transformational role of construction's institutional context (Steinhardt et al., 2019)? Or theorise the re-skilling of the industry and the impacts on employment?
- How can we reconceptualise the industry and its participants to facilitate an understanding of the overarching dynamics of transformation (Dubois and Gadde, 2002; Koskela, 2003; Green and Schweber, 2008; Meacham and Straalen, 2018)?
- How might the concepts of platforms and ecosystems be further leveraged to develop insight as to how the construction industry can create and capture value (Gawer and Cusumano, 2014; Jansson, Johnsson and Engström, 2014; Thomas, Autio and Gann, 2014; Pulkka et al., 2016)?
- In a fragmented market how can we better describe the demand side and its influence on industry transformation (Boyd and Chinyio, 2002)?
- What is the role of academics and knowledge transfer in the transformation process (Gann, 2001)?
- How might we integrate non-financial value and the risks of stranded assets in to our decision-making to help guide the transformation (Bygballe, Håkansson and Jahre, 2013)?

Firm-level Transformation:

- Firms may need to change to address this ongoing industry transformation; how might we conceptualise and predict how the ongoing industrial transformation will shape firms' business models (Lessing and Brege, 2018; Hall, Whyte and Lessing, 2020), and perhaps even reframe the notion of the 'firm' itself?
- What is the role of new financial players (e.g. venture capital) that aim to invest in disruption of organisations, and how are incumbents responding to the changing environment?
- Can theories be developed that describe how firms can select appropriate value propositions, structures, capabilities and assets to respond to the transition (Winch, 1989, 1998; McDonald and Gao, 2019)?
- What insights can we bring to bear to aid firms to re-configure themselves, their services and processes to make best use of the emergent technologies (Davies, Brady and Hobday, 2006)?
- What implications does this have for organisational routines (Bygballe and Swärd, 2019)?
- What can theory from other domains tell us about these challenges, and the consequences for firms and their employees (Hall, Whyte and Lessing, 2020)?
- How can firms identify, implement and scale solutions to address productivity, resource and carbon challenges (Greenwood et al., 2019)?
- Can we describe how the contradictory forces of collaborative working and competitive advantage can be reconciled, enabling a more collective endeavour?

Project and Programme Level Transformation:

- What new procurement models might apply to support transformation, and what might this mean for the contractual landscape, warranties, and the future of supply chains?
- What theoretical insights can be brought to bear to ensure supply chain transparency and resilience in uncertain times?
- How do we conceive of risk and its allocation in a world of collaborative data driven architecture?
- Can we further develop theories to explain project level innovation (Gann, 2000; Slaughter, 2000), while engaging with the contingent and emergent nature of the multi-party construction project? Or reconceptualise team structures (Levitt, 2012; Hall and Scott, 2019)?
- Can we present theories that describe the influence of the project finance and insurance sectors on projects?
- How can our understanding of technological adoption be structured to better steer project delivery models and support the integration of these more complex systems (Whyte, 2019)?

Submissions

To express an interest to contribute to the special issue, authors are encouraged to submit extended abstracts no later than 31st August 2020 via the [online submission system](#).

To ensure that all manuscripts are correctly identified for consideration for this Special Issue, it is important that authors select 'Special Issue: Transforming Construction' when uploading the manuscript. Manuscripts should be prepared in accordance with the [journal's instructions for authors](#). All submitted manuscripts will be subject to Journal's double-blind review process.

Key Dates

Call opens: June 2020

Extended abstract submission deadline*: 31st August 2020

Invitations to produce full papers issued: 30th September 2020

Full paper submission deadline: 15th January 2021

Publication of the special issue: January 2022 (accepted articles will appear online ahead of publication)

*Extended abstracts are not essential but encouraged, as this will provide an opportunity for authors to seek feedback from the guest editors and to receive confidence that the paper proposal is within the scope of this call. Abstracts should be no more than 1,000 words in length including references, and should clearly state the research rationale and purpose/aim, the research problem or theoretical question being addressed, the research methods, and an indication of the key findings.

Informal queries regarding this special issue can be directed to Professor Jacqui Glass, j.glass@ucl.ac.uk. For more general queries about *Construction Management and Economics*, please write to Professor Paul W Chan, p.w.c.chan@tudelft.nl.

References

- Aitchison, M. (2018) *Prefab Housing and the Future of Building: Product to Process*, Lund Humphries.
- Boyd, D. and Chinyio, E. (2002) The client at rest, in: *Understanding the Construction Client*, Oxford UK: Blackwell Publishing Ltd, doi: 10.1002/9780470759561.ch3.
- Bresnen, M. (2017) Being careful what we wish for? Challenges and opportunities afforded through engagement with business and management research, *Construction Management and Economics*, **35**(1-2), 24-34. doi: 10.1080/01446193.2016.1270462
- Bygballe, L. E., Håkansson, H. and Jahre, M. (2013) A critical discussion of models for conceptualizing the economic logic of construction, *Construction Management and Economics*, **31**(2), 104-118, doi: 10.1080/01446193.2012.745645.
- Bygballe, L. E. and Swärd, A. (2019) Collaborative project delivery models and the role of routines in institutionalizing partnering, *Project Management Journal*, **50**(2), 161-176, doi: 10.1177/8756972818820213.
- Chan, P. W. (2020) Revisiting basics: theoretically-grounded interesting research that addresses challenges that matter, *Construction Management and Economics*, **38**(1), 1-10, doi: 10.1080/01446193.2019.1702251.
- Christensen, C. (1997) *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, Harvard Business School Press.
- Dainty, A. and Leiringer, R. (2019) Maintaining a relevant construction management and economics research community, *Construction Management and Economics*, **37**(12), 693-696, doi: 10.1080/01446193.2019.1687992.
- Davies, A., Brady, T. and Hobday, M. (2006) Charting a path toward integrated solutions, *MIT Sloan Management Review*, **47**(3), 39-48.
- Denicol, J., Davies, A. and Krystallis, I. (2020) What are the causes and cures of poor megaproject performance? A systematic literature review and research agenda, *Project Management Journal*, doi: 10.1177/8756972819896113.
- Dubois, A. and Gadde, L.-E. (2002) The construction industry as a loosely coupled system: Implications for productivity and innovation, *Construction Management and Economics*, **20**(7), 621-631, doi: 10.1080/01446190210163543.
- Eklund, J. and Kapoor, R. (2019) Pursuing the new while sustaining the current: incumbent strategies and firm value during the nascent period of industry change, *Organization Science*, **30**(2), 383-404, doi: 10.1287/orsc.2018.1229.
- Farmer, M. (2016) *The Farmer Review of the UK Construction Labour Model: Modernise or Die*, London: Construction Leadership Council.
- Gann, D. M. (2000) *Building Innovation: Complex Constructs in a Changing World*, London: Thomas Telford.
- Gann, D. M. (2001) Towards an understanding of innovation processes in construction, *Building Research and Information*, **29**(3), 253-255, doi: 10.1080/09613210010027738.
- Gans, J. (2016) *The Disruption Dilemma*, Cambridge, MA, USA: MIT Press.
- Gawer, A. and Cusumano, M. A. (2014) Industry platforms and ecosystem innovation, *Journal of Product Innovation Management*, **31**(3), 417-433, doi: 10.1111/jpim.12105.

- Green, S. D. and Schweber, L. (2008) Theorizing in the context of professional practice: The case for middle-range theories, *Building Research and Information*, **36**(6), 649-654, doi: 10.1080/09613210802423512.
- Greenwood, B. N., Agarwal, R., Agarwal, R. and Gopal, A. (2019) The role of individual and organizational expertise in the adoption of new practices, *Organization Science*, **30**(1), 191-213, doi: 10.1287/orsc.2018.1246
- Hall, D. M. (2018) Cracks in the mirror: Conceptualizing the ongoing AEC industry re-Organization, *EPOC 2018: Conference Proceedings*, (December), 458-477, Available at: <https://www.research-collection.ethz.ch/443/handle/20.500.11850/275328>.
- Hall, D. M. and Scott, W. R. (2019) Early stages in the institutionalization of integrated project delivery, *Project Management Journal*, **50**(2), 128-143, doi: 10.1177/8756972818819915.
- Hall, D. M., Whyte, J. K. and Lessing, J. (2020) Mirror-breaking strategies to enable digital manufacturing in Silicon Valley construction firms: a comparative case study, *Construction Management and Economics*, **38**(4), 322-339, doi: 10.1080/01446193.2019.1656814.
- Harty, C. and Leiringer, R. (2017) The futures of construction management research, *Construction Management and Economics*, **35**(7), 392-403, doi: 10.1080/01446193.2017.1306089
- Havenvid, M., Linné, Å., Bygballe, L.E. and Harty, C. (2019) *The Connectivity of Innovation in the Construction Industry*, Milton Park, Abingdon: Routledge.
- Jansson, G., Johnsson, H. and Engström, D. (2014) Platform use in systems building, *Construction Management and Economics*, **32**(1-2), 70-82, doi: 10.1080/01446193.2013.793376.
- Koskela, L. (2003) Is structural change the primary solution to the problems of construction?, *Building Research & Information*, **31**(2), 85-96. doi: 10.1080/09613210301999.
- Lessing, J. and Brege, S. (2018) Industrialized building companies' business models: Multiple case study of Swedish and North American Companies, *Journal of Construction Engineering and Management*, **144**(2), doi: 10.1061/(ASCE)CO.1943-7862.0001368.
- Levitt, R. E. (2012) The virtual design team: Designing project organizations as engineers design bridges, *Journal of Organization Design*, **1**(2), 14, doi: 10.7146/jod.6345.
- Manseau, A. and Shields, R. (2005) *Building Tomorrow: Innovation in construction and engineering*, Farnham, UK: Ashgate.
- McDonald, R. and Gao, C. (2019) Pivoting isn't enough? Managing strategic reorientation in new ventures, *Organization Science*, **30**(6), 1289-1318, doi: 10.1287/orsc.2019.1287
- McKinsey Global Institute (2017) *Reinventing Construction: A Route To Higher Productivity*, McKinsey & Company, (February), 20. doi: 10.1080/19320248.2010.527275.
- Meacham, B. J. and Straalen, I. J. Van (2018) A socio-technical system framework for risk- informed performance-based building regulation building regulation, **46**(4), 444-462, doi: 10.1080/09613218.2017.1299525.
- Orstavik, F., Dainty, A.R.J. and Abbott, C. (Eds.) (2015) *Construction Innovation*, Chichester, West Sussex, UK: Wiley Blackwell.
- Pan, W., Chen, L. and Zhan, W. (2019) PESTEL analysis of construction productivity enhancement strategies: A case study of three economies, *Journal of Management in Engineering*, **35**(1), doi: 10.1061/(ASCE)ME.1943-5479.0000662.

- Pan, W., Gibb, A. G. F. and Dainty, A. R. J. (2012) Strategies for integrating the use of off-site production technologies in house building, *Journal of Construction Engineering and Management*, **138**(11), 1331-1340. doi: 10.1061/(ASCE)CO.1943-7862.0000544.
- Pulkka, L., Ristimäki, M., Rajakallio, K. and Junnila, S. (2016) Applicability and benefits of the ecosystem concept in the construction industry, *Construction Management and Economics*, **34**(2), 129-144, doi: 10.1080/01446193.2016.1179773.
- Pullen, T., Hall, D. and Lessing, J. (2019) *White Paper: A Preliminary Overview of Emerging Trends for Industrialized Construction in the United States*, Version 1. Zurich.
- Schwab, K. (2017) *The Fourth Industrial Revolution*, New York: Crown Business.
- Schweber, L. (2015) Putting theory to work: the use of theory in construction research, *Construction Management and Economics*, **33**(10), 840-860, doi: 10.1080/01446193.2015.1133918
- Sheffer, D. A. and Levitt, R. E. (2010) *How Industry Structure Retards Diffusion of Innovations in Construction: Challenges and Opportunities*, CRGP Working Paper, 59(August).
- Slaughter, E. S. (2000) Implementation of construction innovations, *Building Research & Information*, **28**(1), 2-17, doi: 10.1080/096132100369055.
- Steinhardt, D., Manley, K., Bildsten, L. and Widen, K. (2019) The structure of emergent prefabricated housing industries: a comparative case study of Australia and Sweden, *Construction Management and Economics*, **38**(6), 483-501, doi: 10.1080/01446193.2019.1588464.
- Thomas, L. D. W., Autio, E. and Gann, D. M. (2014) Architectural leverage: Putting platforms in context, *Academy of Management Perspectives*, **28**(2), 198-219, doi: 10.5465/amp.2011.0105.
- Turk, Ž. and Klinc, R. (2019) A social – product – process framework for construction A social – product – process framework for construction, *Building Research & Information*, in press, doi: 10.1080/09613218.2019.1691487.
- United Nations (2019) *World Population Prospects 2019. (ST/ESA/SE, World Population Prospects 2019: Highlights, (ST/ESA/SE. New York: United Nations Department of Economic and Social Affairs, Population Division. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/12283219>.*
- Whyte, J. (2019) How digital information transforms project delivery models, *Project Management Journal*, **50**(2), 177-194, doi: 10.1177/8756972818823304.
- Winch, G. M. (1989) The construction firm and the construction project: A transaction cost approach, *Construction Management and Economics*, **7**(4), 331-345, doi: 10.1080/01446198900000032.
- Winch, G. M. (1998) Zephyrs of creative destruction: Understanding the management of innovation in construction, *Building Research & Information*, **26**(5), 268-279, doi: 10.1080/096132198369751.
- Worsnop, T., Miraglia, S. and Davies, A. (2016) Balancing open and closed innovation in megaprojects: insights from Crossrail, *Project Management Journal*, **47**(4), 79-94, doi: 10.1177/875697281604700407.
- Zhang, R., Zhou, A. S. J., Tahmasebi, S. and Whyte, J. (2019) Long-standing themes and new developments in offsite construction: The case of UK housing, *Proceedings of the Institution of Civil Engineers: Civil Engineering*, **172**(6), 29-35. doi: 10.1680/jcien.19.00011.