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Beyond the boundary and scale of the construction project

Paul W. Chan

Introduction

For many decades now, there have been longstanding calls to transform construction, often by promoting recipes for change that favour technological solutions borrowed from other sectors, such as manufacturing (e.g. Östergren and Huemer, 1999; Murray and Langford, 2003; Fernie et al., 2006; Green et al., 2008). For example, following the Global Financial Crisis of the late 2000s, automation, off-site fabrication, and digitalisation were among the solutions proposed in the fourth industrial revolution that promised improvements in construction productivity and performance (e.g. World Economic Forum, 2016). Such calls continue to be reiterated during the COVID-19 pandemic; the McKinsey Global Institute's *The Next Normal in Construction*, for instance, suggested that scaling up standardisation, modularisation, and digital technologies would accelerate the transformation of global construction from a fragmented project-based industry to a market-based industrialised process (Ribeirinho et al., 2020). Yet, despite these repeated recommendations for technological advancements as panaceas to improve the industry, the problems of fragmentation and the resultant poor performance of the industry persist.

In this chapter, it is argued that this persistence can be attributed in part to the narrowness with which boundaries are drawn on what matters to construction management researchers. By placing a dogged emphasis on the 'project' and the object of delivering the 'building', prevailing scholarship in construction management research has largely been concerned with understanding and developing ways of producing the built environment on schedule and on budget. In turn, underpinning this focus on productivity is the implicit assumption that growth matters. Thus, in transforming the production of the built environment, recommendations to invest in production technologies and business models to digitalise and industrialise construction are often framed in terms of building more and building quicker, rather than building better.

The aim of this chapter is therefore to seek a broader agenda for construction management researchers that goes beyond the construction project narrowly defined. In this pursuit to widen our research considerations, inspiration is drawn from the (sustainability) transitions literature, which points to a need to consider change in a multilevel context. In so doing, the conceptualisation of projects should move beyond the bounded rationalities of time and cost. Instead, this chapter calls for expanding our spatiotemporal perspectives, which will enable the stretching of our collective imagination to build better. This, it is argued, will also return the field of project studies back to its roots as a source of post-bureaucratic creative exploration and innovation.

Changing agendas in construction management research: from utilitarian instruments to questioning the values of construction

Despite recognition that the management of construction is a sociotechnical process where practices are a result of the interdependencies and interactions between humans and material objects (e.g. Harty, 2005; Schweber and Harty, 2010; Sackey et al., 2015; Pirzadeh et al., 2021), construction management research is still predominantly framed in instrumental and technical terms. Take, for instance, the top ten most-cited papers of all time published in *Construction Management and Economics* (Table 6.1); of these, nearly half are about identifying and prioritising factors that contribute to success or failure, which are often couched in terms of time or cost performance. Such papers are typically based on perception-based surveys, which means that these analyses are usually superficial and do not penetrate the depths and complexities of everyday practices of construction management.

In a recent bibliometric analysis of over 3500 studies published in the construction management research field from 2000 to 2020, Bilge and Yaman (2022) identified that the key matters of concern for researchers included building information modelling, information management, scheduling and cost optimisation, lean construction and agile approach, and megaprojects. They also found strong alignment between construction management research and the Project Management Institute's Body of Knowledge (PMBoK) since the PMBoK in its various editions was identified as one of the most influential document in attracting citations from the authors of the studies reviewed.

The peculiarities of project-based organisation of construction work have long been acknowledged. Ever since Stinchcombe (1959) differentiated between more stable operations in the manufacturing sector that favoured bureaucratic administration and the more variable operations in the construction sector

Table 6.1 List of most-cited and most-downloaded papers in construction management and economics of all time (as of 28 January 2023)

Most-cited papers	Most-downloaded papers
1. The construction industry as a loosely coupled system: implications for productivity and innovation, by Dubois and Gadde (2002)	1. Construction in developing countries, by Ofori (2007)
2. Critical success factors for PPP/PFI projects in the UK construction industry, by Li, Akintoye, Edwards, and Hardcastle (2005)	2. Stakeholder impact analysis in construction project management, by Olander (2007)
3. Partnering in construction: a critical review of issues, problems and dilemmas, by Bresnen and Marshall (2000)	3. Editorial: stakeholder management in construction, by Atkin and Skitmore (2008)
4. Factors influencing construction time and cost overruns on high-rise projects in Indonesia, by Kaming, Olomolaiye, Holt, and Harris (1997)	4. Incorporating the effect of weather in construction scheduling and management with sine wave curves: application in the United Kingdom, by Ballesteros-Pérez, Smith, Lloyd-Papworth, and Cooke (2018)
5. Analysis of factors influencing project cost estimating practice, by Akintoye (2000)	5. From client to project stakeholders: a stakeholder mapping approach, by Newcombe (2003)
6. Sustainable construction: principles and a framework for attainment, by Hill and Bowen (1997)	6. What is engineering construction and why is it important? Towards a research agenda, by Brookes (2012)
7. Construction safety training using immersive virtual reality, by Sacks, Perlman, and Barak (2013)	7. Critical success factors for PPP/PFI projects in the UK construction industry, by Li, Akintoye, Edwards, and Hardcastle (2005)
8. Significant factors causing delay in the UAE construction industry, by Faridi and El-Sayegh (2006)	8. Influence, stakeholder mapping and visualization, by Walker, Bourne and Shelley (2008)

Most-cited papers	Most-downloaded papers
9. Stakeholder impact analysis in construction project management, by Olander (2007)	9. The leadership practices of construction site managers and their influence on occupational safety: an observational study of transformational and passive/avoidant leadership, by Grill, Nielsen, Grytnes, Pousette and Törner (2019)
10. Sustainable construction aspects of using prefabrication in dense urban environment: a Hong Kong case study, by Jaillon and Poon (2008)	10. Diffusion of digital innovation in construction: a case study of a UK engineering firm, by Shibeika and Harty (2015)

that lend more efficiently to craft or professional-based forms of administration, others have tried to make sense of how construction work is managed in distinct ways when compared to other sectors. For instance, Eccles (1981) argued that, as a consequence of the intensive use of technology, construction work needs to be coordinated in the project-organisational form to deal with complexity, uncertainty, and the need for flexibility. Similarly, when questioning whether it is ever appropriate to treat construction as an ‘industry’, Groák (1994) also stressed that it would be more productive to regard construction as ‘agglomerations of projects – rather than as a discrete industry or a fixed constellation of firms’ (p.287).

Drawing attention to construction as a project-based endeavour has also attracted criticisms. Although, like Groák (1994), Green (2006) acknowledged that the construction sector could offer a template of project-based organising for other economic sectors to follow, he also criticised project management scholarship for being overly ‘managerial and unidimensional ... understood in terms of its substantive content’ and less concerned with ‘the interplay between discourse, human agency and industry structure’ (p.233). Thus, the research agenda has largely been held stable, influenced by the substance of such instrumental standards as the PMBoK, where accounting for and optimising the success factors of time and cost performance matters and where addressing stakeholders’ needs are reduced to models of stakeholder management (see Table 6.1).

Reviewing past inquiries into the affairs of the UK construction industry, Langford and Murray (2003) also remarked on how unchangeable recurring themes of performance improvement were framed. While they can see the value of driving improvements in the sector, they argued that the benefits of these improvements are almost always assumed to accrue only to the main members of the construction team (i.e. the client, designers, and construction

firms) rather than to the public and society at large. Consequently, Langford and Murray (2003) also noted an ever-growing obsession with and surveillance through benchmarking specific and narrow targets of time and cost savings in construction projects.

Scholars have thus challenged the techno-rational approach to establishing what counts in understanding and improving performance. By reducing the 'project' to the substantive content of time and cost performance, where success factors are assumed to provide the basis for identifying 'best practices', standardised accounts of project management through instruments such as the PMBoK neglect the power of human agency as well as political, ethical, and moral considerations (Hodgson and Cicmil, 2007). As Harvey and Knox (2012) critiqued, building work

involves a great deal more than simply the execution of a planned process of material transformation. As well as technical expertise, their appearance also requires a force of social and political will which is able to generate and foster the belief that these technologies have a capacity to transform the spaces through which they will pass. (p.523)

More recent scholarship has started to go beyond technical and rational concerns to shine the spotlight on a more social, values-based agenda for construction management research. Kuitert et al. (2019), for instance, argued for a wider view where the basic project values of time, money and quality are expanded to account for societal values. Kuitert et al. (2019) found that while values relating to efficiency, effectiveness, and the quality of the process are more established and regarded as more important in construction, far less attention is currently paid to values relating to innovation, sustainability, integrity, and transparency. As demands for more sustainable products and services increase, there is a need 'to secure room in projects to be able to manage specific public product-related values during the process and not to restrict themselves beforehand' (p.274); this can be accomplished through innovative approaches to procurement and partnerships.

Others have also investigated the multiple and often conflicting values that professionals have to negotiate. For instance, Bos-de Vos et al. (2016) distinguished between exchange value, professional value, and use value, and found that while making a profit (i.e. exchange value) was important, architects often traded this off with other values, such as work pleasure and reputation (i.e. professional value) and aesthetical delight for the client (i.e. use value) to sustain long-term competitiveness. Similarly, Ahuja et al. (2020) analysed the discursive strategies that architects deploy when confronting conflicting

requirements. They found that architects framed their design interventions in terms of ‘best for the client’ or ‘best for the project’ as they walked the tightrope of being seen as valuable contributors to the client’s objectives on the one hand, while on the other safeguarding their reputation in improving the built environment for everyone (i.e. beyond the immediate client). It is worth noting that Ahuja et al. (2020) view the ‘project’ not in utilitarian terms of delivering to time and budget, but as a place where architects can affirm ‘their identity as experts that contribute to public good through the considered design of the built environment’ (p. 598).

Notwithstanding these efforts to enlarge the scope of construction management research, prevailing scholarship suffers from what Sherratt et al. (2020) called an ‘ideological crisis of imagination’ (p. 1092). Taking the case of research on public–private partnerships, they noted how existing scholarship in construction management research often treats problems faced in the field as a problem of project efficiency and effectiveness. For them, the emphasis on finding the success factors behind project performance falls short of challenging more fundamental issues that condition construction work. Consequently, the ideological crisis of lacking imagination means that wider political and moral questions around the functioning of markets, the impacts of (neoliberal) policy choices and issues of public welfare and societal value go unexamined in construction management research. As Sherratt et al. (2020) argued, ‘Projects and delivery coalitions are not bounded entities, governed only by interior logic or their own emergent properties. It is clear that the execution of projects takes place in, and contributes to, a socio-economic network of interactions and exchanges which extend far beyond their own boundaries’ (p. 1096).

In the next section, a case is made for rethinking the ‘project’ in construction management research to explore how pushing current boundaries can help us move towards more sustainable change.

Rethinking the ‘project’ in construction management research: towards a multilevel and multi-scalar understanding of the spatiotemporal dynamics of projects

In the preceding section, it was argued that construction management researchers have to date drawn tight boundaries around key objects of research. These revolved around narrow perspectives of investigating project performance, typically aimed at identifying success factors that can contribute to optimising and improving time schedules and cost budgets. There is also a tendency to focus on the benefits of performance improvements for key

members of the project team, including the client, designers, and construction companies. And even in relation to construction companies, there is often an overemphasis on the perspectives of the main contractors. In a recent text on the economics of construction, Gruneberg and Francis (2019) remarked that ‘Much literature on the construction industry is written from the point of view of main contractors’ (p. 71), which glosses over the role and workings of other players, such as subcontractors and specialist contractors, that are instrumental in hiring labour to deliver projects in practice.

The narrow conceptualisation of who and what matters in construction management research is also reflected in the boundaries of construction management practice. Numerous commentators have critiqued industry practice for being too conservative and risk averse to change. Hall et al. (2020), for instance, referred to the mirroring trap where existing industry structures mean that the key actors in established organisational and knowledge boundaries are less likely to embrace disruptive technologies and digital innovation. Loosemore et al. (2021a) also see the construction industry as ‘a “closed-shop” with strong perceptions of the ideal construction worker, longstanding industry incumbents, ... strong and long-established existing relationships between existing players and risky procurement and payment practices’ (p. 1919). In exploring how project-based firms respond to government initiatives on low-carbon and sustainable construction, Sergeeva and Winch (2020) recounted this quote from a Research and Development Manager at a contracting firm:

some of the senior leaders in various businesses are so busy fighting fires, operational issues that [they] actually do not take the time to step back to think about long-term vision, long-term goals. If there are long-term visions, long-term goals, they are very much about profit-levels, profit-margins rather than carbon necessarily and things like that. (p. 384)

This short-term thinking is also reflected in Whyte and Nussbaum’s (2020) study of the transition between the end of projects and the operational phase of business-as-usual. One of the interviewees in their study reflected on a story in the Heathrow Terminal 4 project, where the difference of perspectives between the project manager of the construction project and the operations manager of the terminal was brought to the fore: on the one hand, the project manager was only concerned about receiving a clear and specific brief so he could get on with the design and construction of the building, while on the other hand, it was difficult for the client (in this case, the operations manager) to be clear about the requirements due to the uncertainties and the ever-changing context of airport operations.

By focussing mainly on the perspectives and experiences of key members internal to the project (i.e. designers, contractors, and the client), construction management researchers have also arguably reinforced the narrow boundaries in accounting for industry practice. Consequently, despite the policy rhetoric to improve the performance of the industry (and not just economic performance, but also social and environmental aspects), the construction industry still seems to be driven by short-term profit-making motives. For instance, Martek et al. (2019) found that despite the maturity of rating systems for sustainable building and the setting of sustainability targets by policy makers, industry practice still falls short due to a number of barriers; these include a lack of demand for sustainable building by end-users and a lack of awareness as to what can be done by the supply chain beyond rating systems. Indeed, simply measuring something does not guarantee the improvement of that something. Similarly, Loosemore et al. (2021a) also found a disconnect between government policy to promote social procurement goals (e.g. of generating more employment for disadvantaged communities) and the enactment of such policy intent through construction firms in practice. Oftentimes, contractors cannot see the value of and connections between delivering the building in a timely and cost-effective manner and the accomplishment of social responsibility through, for example, employing and training non-traditional workers. Thus, in these examples, the intent and purchasing power (particularly of public-sector clients) did not translate to the implementation of environmental and social sustainability goals, due in part to the focus on rational instrumentalism where questions around project performance and the management of risks take precedence.

There is therefore room for a broader conceptualisation of the ‘project’ in construction management research. In the following sub-sections, I will explore the potential for expanding this conceptualisation, and the implications for construction management research and practice. In so doing, I will draw on critical readings in the field of project studies and in sustainability transitions to emphasise the wider multilevel and multi-scalar contexts in which projects in construction are accomplished.

Recapturing the roots of project management as a creative and innovative field

Project management has been described by Hodgson (2004) as a ‘technology of post-bureaucratic control ... offering management techniques able to cope with the discontinuity, flexibility and fluidity of work roles, the permeability of organizational boundaries, and the constancy of change’ (p.85). Yet, at the same time, the capacity to deal with flexibility and change is set in tension against managerial desire for bureaucratic control where the structure of

performance measurement and benchmarks provide a sense of efficiency and predictability. Thus, Hodgson (2004) shines the spotlight on the paradox of project management in its ability to creatively deal with change on the one hand while emphasising the need to do so in a controlled manner on the other.

In finding the lost roots of project management, Lenfle and Loch (2010) revisited the Manhattan Project of the 1940s and the ballistic missiles development projects, Atlas and Polaris. They traced how the success of these programmes could be attributed to exploration and experimentation, and by building redundancies through maintaining concurrent parallel strategies – strategies that would be dismissed as too time consuming and costly by modern project standards. They also noted that, in the 1960s, the formalisation of the project management profession coincided with a shift towards more planning and control. Taking the US Department of Defense as a case, they found that more centralised decision-making coupled with a change towards fixed-price contracts meant that the phased waterfall approach to planning projects became the norm. This also led to the erosion of practices of trial-and-error that are critical in searching for novelty and innovation, especially in exploration projects that are characterised by high levels of uncertainty. According to Lenfle and Loch (2010), the neglect of exploration and experimentation is unfortunate since, in the examples of the Manhattan Project, Atlas, and Polaris, these practices were not only useful in finding new scientific breakthroughs but also ended up saving time in achieving the mission.

Indeed, in Hodgson's (2004) study of delivering strategic change in a telebanking organisation, he also observed the disconnect between actual project practices based on experimenting and learning from failure (which yielded, at times, more effective results) and the milestones-and-procedures-dominated rhetoric of project management control (which served to alienate those on the front line). In recapturing the lost roots of project management, the examples of Hodgson (2004) and Lenfle and Loch (2010) remind us of the innovative potential of projects, which is often eclipsed by the (false) sense of bureaucratic control that has long featured in the body of knowledge that frames the project profession. As Davies (2014), in reviewing the fields of project management and innovation management, stressed, despite clear links between the management of (one-off) projects and innovation in the 1950s, developments of both fields have since followed distinct pathways; even in spite of more recent convergence, these linkages tended to focus on the application of project management to deal with the uncertainties of innovation. As Davies et al. (2018) explained, where innovation management research is characterised by the adaptability model that emphasises the opportunities of uncertainties, project management research is dominated by the optimising model, where the focus

lies in creating certainty through the management (or eradication) of negative risks. Thus, as Davies et al. (2018) noted, while both project management and innovation management share a common starting point – that is, the creation of project management procedures to deal with large-scale projects aimed at developing technological breakthroughs in the 1950s – both fields have failed to learn from each other.

There is a need to balance accounts of the ‘project’ so that projects *as* innovation (rather than projects *for* innovation) can be further examined. In so doing, researchers can open up space to analyse how experimentation, exploration, and establishing redundant practices can contribute to project success. While there have been calls to encourage ambidextrous thinking in organisations (e.g. Eriksson and Szentes, 2017; Nowacki and Monk, 2020), where exploration and exploitation are considered hand in hand, studies in the construction management research field have tended to neglect the role of exploration as the emphasis is placed on exploitation (see Koch-Ørvad et al., 2019, for a recent exception). Thus, by refocussing attention on the practices of exploration in construction projects, research might find ways to harness the innovative potential of projects and improve performance, ways that may be counterintuitive to the rational, optimising paradigm.

Projects as portals of innovation in multilevel (sustainability) transitions

That construction projects can be seen as portals of innovation is not a new idea, even if this has been downplayed by the construction management research field. After all, projects are typically carried out in the context of change. In built environment research, van Bueren and Broekmans (2013) examined how construction projects could be used as instruments in the mainstreaming of niche technologies in green and sustainable building. Drawing on the sustainability transitions literature, they saw green and sustainable building in the broader context of the multilevel perspective. According to the multilevel perspective (Geels and Schot, 2007; Geels, 2011), sustainability transitions require systemic reconfiguration, and breakthroughs in transforming existing sociotechnical systems (e.g. energy, transport, housing) shape and are shaped by the interplay between three nested levels: niche technologies (micro), established regimes (meso), and the contextual landscape (macro). The multilevel perspective was formed in response to deficiencies found in the technological innovation literature; while new technologies, products, and services might go some way to help us become more sustainable, without systemic societal change, technologies alone are limited to driving radical shifts in

our consumption and production patterns and practices (see Smith et al., 2010; Loorbach et al., 2017).

Although the multilevel perspective provides the broader context to understand how sociotechnical systems can be transformed to become more sustainable, the emphasis to date has been on examining how niche technologies can generate the disruptive change as new and emerging actor networks alter discourses and agendas, which in turn influences policy and practice (Loorbach et al., 2017). Niches at the micro level can therefore be seen as protected spaces, arenas where time is permitted for exploration and experimentation, for instance, through financial subsidies. Yet, a perennial problem lies in finding pathways through which breakthroughs, both technical and non-technical, can move beyond niche experiments to influence and reshape existing regimes. Regimes entail established structures and dominant practices and are often seen as resistant to change (see Geels, 2014a). To elaborate, Geels (2014b) explained how firms in an industry can often organise resistance by mobilising their customers and suppliers, lobby government and policy makers, or challenge regulations in order to protect the industry regime in terms of an industrial identity, norms, mindset, and technical knowledge and capabilities. Thus, the challenge remains in terms of finding ways to scale up (in numbers), scale out (in scope), and scale deep (in changing behaviours more generally) so that dominant regimes (e.g. of unsustainable practices) can be toppled (e.g. Moore et al., 2015; Loorbach et al., 2020).

Recent scholarship has begun to question the binary framing of the disruptive niche and resistant regime. Cuppen et al. (2019), for instance, studied the development of shale gas in the Netherlands to find that, far from resisting the exploitation of shale gas, it was the regime actors who supported such development. Indeed, while early transitions scholars focussed on emerging players who disrupted at the niche level, there has been growing emphasis on studying the increasing number of experiments that are also done by the more established regime actors (Grin, 2020). This is where projects as a portal for innovation in the context of sustainable transitions have potential for further investigation and for scaling up breakthroughs in practice.

Returning back to van Bueren and Broekmans (2013), for example, they studied the design and construction of a town hall in Leiderdorp in the Netherlands, a green project commissioned and delivered by mainstream actors. Their findings indicate how competing niche (based on ecological and resource efficiency) and regime (based on economic efficiency) principles interacted with one another, and how these transformed in priority over time – with niche principles being more significant at the design competition stage, and

the winning tender going to the submission with the lowest-price tender (a common regime response). After signing the contract, it seemed that 'business-as-usual' prevailed. On the technology front, there was a tension between using niche innovative technologies and those that were tried and tested at the regime level. However, van Bueren and Broekhans (2013) also observed this to be a false dichotomy. In reality, the niche technologies were also tried and tested in other niche projects experimented elsewhere, which in turn convinced the architect of the workability of some technologies after conducting study visits abroad. Thus, there is more nuance to the distinction between the experimental niche and the resistant regime, as '[construction] projects can be portals through which innovations are adapted and used and possibly transferred to the regime' (van Bueren and Broekhans, 2013, p. 148).

As mentioned earlier, construction management researchers have focussed mainly on practices of exploitation, reiterating how the industry regime is generally conservative and lacks innovation (e.g. Eriksson and Szentes, 2017; Hall et al., 2020; Liu et al., 2021). Yet, the analysis of van Bueren and Broekhans (2013) raises the possibility of searching for practices of exploration. In a similar fashion, Eriksson and Szentes (2017) also found that the separation between exploration as radical innovation and exploitation as continuous development draws an artificial line; in practice, 'any type of development is related to exploration, no matter how small the fine-tuning is, while the other alternative is to carry on as normal. Hence, the choice is often dichotomised, to develop or not, rather than sophisticated in terms of analytically deciding the extent of development' (p. 499). As will be argued in the next sub-section, there is room for more research that examines and learns from the practices of exploration in and around construction projects.

There have been notable successes of learning from practices of exploration in the literature, especially in the research on megaprojects. Davies et al. (2014), for instance, analysed innovation in the London Crossrail project, a megaproject that was at the time the largest civil engineering project in Europe, and explained how the innovation process also opened up possibilities of learning from previous megaprojects, such as the building of the Channel Tunnel Rail Link, Heathrow Airport Terminal 5, Thames Tideway Tunnel, and the London Olympics Development. Indeed, there have been successive attempts to document lessons learnt, such as the Learning Legacy following the London Olympics Development Programme, which saw industry, government, and academic researchers collaborate to capture 'best practices' (see <http://learninglegacy.independent.gov.uk/>).¹ Notwithstanding these attempts, the failure to learn from past projects has generally been a persistent problem in construction (see Liu et al., 2021). Furthermore, while these learning lega-

cies have tried to capture ‘best practices’, these tend to emphasise the guiding principles and *what* was done to implement these principles, rather than the twists and turns of *how* those involved accomplished these in practice. There is therefore room for researchers to provide richer and thicker descriptions of everyday practices to show how explorations are exploited in practice. In so doing, this will also address criticisms that the literature on transitions has often downplayed the power and practices of human agency (see Geels, 2011, 2020; Koistinen and Teerikangas, 2021).

Projectification of society: shifting from a lonely project to a multi-scalar ecosystem

In analysing how sustainable innovations in construction can be facilitated through exploratory projects, Koch-Ørvad et al. (2019) presented a case study of Gamle Mursten, a Danish company that specialises in cleaning and selling reused bricks. As a disruptor in driving the reuse of materials in circular construction, Gamle Mursten faced many obstacles. These included the ability to stimulate demand in the market, gaining access to old bricks, and regulatory hurdles in certifying the structural strength and quality of reused bricks. Koch-Ørvad et al. (2019) found that, to tackle these challenges, Gamle Mursten started six projects concurrently, half of which were aimed at addressing the problem of access to reused bricks (i.e. supply-side problem) and the other half targeted at improving the documentation and certification problem (i.e. to stimulate demand). Thus, in building the ecosystem for reused bricks in Denmark, these parallel projects helped Gamle Mursten secure their position as an intermediary for the supply and demand of reused bricks in the circular economy.

Koch-Ørvad et al.’s (2019) study is noteworthy for a number of reasons. First, when the ‘project’ is examined in construction management research, there is often a tacit assumption that the project is a ‘building’ project. Attention is then placed on identifying optimal pathways to ensure that the building is completed on time and on budget. Yet, the analysis of Gamle Mursten shows that alongside the ‘building’ project, companies can often start other concurrent projects to facilitate change and innovation. This multi-project context is rarely considered in the construction management literature, apart from the research field on megaprojects (though, see Hedborg and Gustavsson, 2020, for a recent exception). Second, their study also revealed the practices of confronting and negotiating the existing regime (e.g. by offering alternative value propositions to demolishers, and finding ways to circumvent prevailing certification schemes). In so doing, they also showed how exploration projects can also lead to exploitation (in this case, in terms of increasing the use of

reused bricks). Third, it is also notable that the wider institutional context played an important part. Specifically, funding from various schemes by the Danish government and the European Union allowed the creation of the protective space needed to develop this niche technology. Thus, this shines the spotlight on the value of public-sector involvement in driving private-sector innovation, and provides a countervailing argument to the dominant discourse of private-sector efficiency/effectiveness in public-private partnerships (an argument also made by Sherratt et al., 2020).

By broadening the 'project' beyond the single worksite to consider the interrelationships with other parallel (exploration) projects, we are then able to identify new and emerging actors that go beyond the usual suspects of the designer, client, and construction firm (see also Gerding et al., 2021, for a recent analysis of emerging and established actor networks in circular construction). Thus, how researchers conceptualise and categorise projects and how they choose which 'project' to follow can therefore result in substantive differences on the focus taken in the analysis. By focussing on the 'construction' or 'building' project, construction management researchers create a blind spot on the transformative power of what goes on in the broader institutional context outside the boundaries of the project (e.g. Liefink et al., 2019; Oti-Sarpong et al., 2022).

Traditionally, the project is conceptualised as a one-off task with a definitive start and end goal.² In the continued projectification of society, Jensen et al. (2016) offered an alternative conceptualisation as they characterised projects as the human condition. They distinguished the traditional disciplinary society from the project society by examining the relations between activity, space, time, and relations. In the projectified society, activity is open-ended, emerging, and organised through projections into the future rather than through repetitions of past routines. Thus, the project society requires spaces that offer flexibility, where time is not a fixed permanent construct but a temporary passage through and between projects. Relations are thus not fixed and hierarchical, but rather connected through ever-changing networks.

Jensen et al.'s (2016) broadening of the conceptualisation of the 'project' has four significant implications for construction management researchers. First, as already pointed out in Koch-Ørvad et al.'s (2019) study, there is a need to pay more attention to the non-routine exploration activities that can drive progress in firms operating in the construction industry, rather than the routine activities of designing and constructing buildings. Second, while construction has often been regarded as a localised site-based activity, there is also a need to broaden our spatial awareness beyond the local. For instance, in Harvey

and Knox's (2012, 2015) study of road construction in Peru, what is seemingly a local road construction project has significant connections with geopolitics in the region (and particularly with neighbouring Brazil) and the power of global finance (see also Rafferty and Toner, 2019; Styhre, 2019). There is thus scope for construction management researchers to expand the spaces of construction to examine how the global and local collide, and to destabilise our a priori assumptions of which actors matter and in what ways by tracing hitherto under-examined associations between stakeholders and actors (see also the example of Schweber and Harty, 2010).

This enlargement on the spatial front can also be found in scholarship that draws attention to the concept of project ecologies (see Grabher, 2002). For example, Hedborg and Gustavsson (2020) zoomed out of the single, lonely project to explore the interrelationships across multiple projects and their implications in building a neighbourhood. By analysing how the municipality, developers, contractors, and suppliers were connected across multiple projects in Stockholm, Sweden, Hedborg and Gustavsson (2020) were able to examine horizontal interdependencies to show how these different actors across multiple projects were often mindful of each other's neighbouring work. This awareness created structural, relational, and cognitive interdependencies to influence critical decisions made within each respective project. One clear example was the use of a construction logistics centre that ensured a more coordinated approach to supplying different project sites simultaneously to meet the high sustainability requirements set out by the municipality. Often, how the decisions made in one project affect and are affected by decisions made in neighbouring projects is missed by construction management researchers who typically focus on the single 'building' project.

Third, there is also a need to extend our temporal perspectives to consider the longer-term sustainability impacts of construction projects. Here, Whyte and Nussbaum (2020) remind us that construction projects do not end at the hand-over to operations. In a similar vein, Brookes et al. (2017) used an example of a long-term energy infrastructure megaproject to illustrate the complexities of multiple temporalities at play – from the lifecycle of the delivery project with multiple potential scenarios for the operations and decommissioning of infrastructure, to the lifespan of stakeholders and the special purpose vehicle. These examples point to the need to rethink 'project' time as a fixed, bounded, and linear construct. Indeed, it is important to also take into account interdependencies between the management of the construction project and the management of the building asset. After all, it is well known that the cost of operating the built asset far outweighs the costs of designing and constructing the building in the first place. Yet, in focussing on the optimising of time and

the costs of construction, decisions are potentially made at the expense of longer-term economic and environmental costs. In analysing how a contractor was exploring a new business model that placed long-term servicing and predictive performance of energy equipment, Robinson et al. (2016) found that decisions were still constrained by thinking about capital expenditure rather than longer-term operating expenditure. Creating longer-term sustainable outcomes can often require investments in new technologies and processes early on. Thus, without stretching our temporal perspectives beyond the timeframe of the project to consider the lifetime costs of the building asset, breakthroughs towards more sustainable outcomes will be limited.

Fourth, there is also a need to develop and understand new relationships, particularly in terms of emerging disruptive players in the ever-evolving actor networks in construction. Take circular construction, for instance: Gerding et al. (2021) mapped out new actor networks across several exemplary projects in the Netherlands to examine the relationships between established (e.g. building contractors) and emerging (e.g. circularity expert) players. While their network analysis indicated that established players still occupy central positions in information exchange, Gerding et al. (2021) also identified instances where involving circularity experts early on in the construction project can help generate end-of-life scenarios that in turn facilitate the implementation of circular designs. They also stressed that the realisation of new ways of working (in their case, on circularity) requires the combination of knowledge from both established and emerging players.

In facilitating the inclusion of emerging actors within established networks in the construction industry, an increasingly significant, if under-examined, role is the role played by intermediaries. In Vihemäki et al.'s (2020) study of how the uptake of sustainable wood construction in multi-storey buildings can be encouraged, the authors highlighted the role intermediaries played in building networks, articulating expectations, promoting learning and exploring, and creating standards. Similarly, Loosemore et al. (2021b) found that intermediaries can play a crucial function in integrating new players unfamiliar to the established regime (in their case, third-sector organisations) within existing project supply chains to drive social procurement implementation in construction projects.

Intermediaries play a vital role in orchestrating relationships to better connect supply and demand in the procurement of innovative solutions (see Edler and Yeow, 2016). An important contemporary development lies in the growth of platforms as critical intermediaries that link demand- and supply-side actors in the ecosystem. Popular examples from outside construction include digital

platforms, such as Uber, Airbnb, and Google. Platform thinking is still at a very nascent stage of development in construction management research (e.g. Chan, 2020; Mosca et al., 2020), although this is likely to gain further traction in the near future as platforms have the power to act as intermediaries to integrate both established and emerging players in driving innovative and sustainable solutions. That said, current emphasis appears to focus mainly on more or less established actors and processes on the supply side, with less attention paid to demand-side end-users (see Chan, 2020; Vihemäki et al., 2020).

Concluding remarks

To conclude, prevailing scholarship in construction management has been critiqued in this chapter for its tendency to pursue a narrow research agenda centred on the construction project, and which often frames problems from the perspectives of established actors (namely, designers, clients, and contractors) emphasising the optimisation of a limited set of (mainly time and cost) performance objectives. In so doing, construction management researchers have missed opportunities to take a broader view to engage with wider societal and sustainability transition challenges. These broader challenges demand that the attention of construction management researchers go beyond the boundaries of the construction project.

In this chapter, a more far-reaching reconceptualisation of the construction ‘project’ was put forward in three ways: (1) projects as a source of creativity and innovation; (2) projects as a portal for breakthroughs in multilevel sustainability transitions; and (3) projects as part of an expansive ecology and multi-scalar ecosystem to drive change. Through these three ways of rethinking the ‘project’ in construction management research, several under-examined questions have been raised that can provide fertile lines of future inquiry. First, there is the need to shift the emphasis towards understanding and promoting the roles of exploration, experimentation, and adaptation, and to deepen our knowledge of the relationship with (as opposed to the prevailing focus on) exploitation, control, and optimisation. The construction sector has often been regarded as a low-innovation sector, but stressing this point downplays the potential for construction projects to serve as portals for driving innovation. In striking a balance with exploration and exploitation, construction management researchers can then attend to the possibilities of searching for and embedding creative and innovative breakthroughs in the established regime.

Second, by zooming out of micro-level practices that occur within the confines of the construction project to place more emphasis on how the meso-level

regime can change or is changing, construction management researchers can pay attention to the incorporation of new actors currently unfamiliar to the established regime. For example, in transforming construction to become more circular or digitalised, there are emerging players, such as circularity advisors, technology firms, and information, product, and digital platforms, among others, that can potentially add value to existing players and processes. Yet, how the emerging players can become integrated with, strengthen, or even outcompete the incumbents remains an under-examined area of research.

Third, and in line with growing attention to new actors beyond the usual suspects of the client, designer, and contractor, construction management researchers can also expand their spatial and temporal considerations of adjacencies and interdependencies. Here, there is room for more research to investigate how life outside the construction project can also shape better, more innovative outcomes in/for the project. Apart from increasing recognition of the need to take into account the asset management life cycle when deciding on the design and delivery of construction projects, researchers can also consider interrelationships with multiple projects, whether directly or indirectly connected within a neighbourhood or an (urban) area. To do so requires construction management researchers to step outside of our knowledge domain to create space for deeper and more meaningful conversations with fields outside of our own.

Notes

1. The learning legacy covered a broad range of themes, including archaeology, town planning, sustainability, procurement, project and programme management, health and safety, design and engineering innovation, systems and technology, equality and inclusion, and transport. The learning legacy has now been archived since October 2016, and it is unclear to what extent the lessons learnt are still kept alive.
2. In a recent essay, Jacobsson and Söderholm (2022) use the terms time bracketing and scope bracketing to illustrate how *Homo projecticus* sets boundaries on beginnings and endings in a projectified society. They argue that bracketing is what conditions actions and facilitates getting things done in projects.

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