

# MAKING SENSE OF INNOVATION IN THE UK CONSTRUCTION SECTOR

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The existing literature on innovation in the construction sector is often oriented towards positivist and quantitative approaches. Research has tended to focus on the means by which innovation can be determined or measured by variables or linear progression of stages. Variable-based approaches are assumed to be the only legitimate basis for theory development and practical explanation. Whilst these approaches may provide indications of averages across large samples, they often ignore multiple perceptions, contexts and time completely or compress them into variables. These approaches have been challenged by other researchers who consider innovation as a narrative mobilised by organisational actors, emphasising multiple perceptions and situational contexts that unfold over time. Building upon and extending this work, the paper explores and explains how identities of construction sector practitioners and contextual circumstances shape the ways in which their narratives of innovation are mobilised. The empirical research of the paper draws from thirty semi-structured interviews with UK construction sector practitioners. Interviewees were engaged with Constructing Excellence and, in some sense, constructed their identities as innovation champions. Different storylines were shared by the interviewees, often taking different perspectives and viewpoints. Applications of Building Information Modelling (BIM) have often been described as innovations. Throughout the course of the interviews, it was evident that enactments of innovations by construction sector practitioners were shaped by their identities and experiences. Grounded in identity construction, a sensemaking perspective is applied as a theoretical lens for explaining how identities of the interviewees and situational contexts shaped the ways in which their narratives were mobilised. The paper discusses the narratives of innovation in the context of project lifecycle. It addresses the research implications and suggests some future research directions.

Keywords: context, enactment, identity, narrative, sensemaking.

## INTRODUCTION

Since the 1990s the UK government has commissioned a series of reports on innovation and performance improvement in the UK construction sector. The Egan (1998), the Wolstenholme (2009) government reports claimed to promote an innovation agenda in the construction sector. These reports have inspired many construction sector practitioners to drive the innovation agenda in their organisations. The overriding tendency is to promote innovation as one of the driving forces of growth of firms, industries and economies. Innovation is often viewed as one of the

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organisational values that can help to retain competitiveness. The innovation agenda aims to engage each stakeholder's responsibility through collaboration across the boundaries in order to receive legitimacy. Innovation is promoted as an essential part of stakeholders' mindsets, attitudes and behaviour.

Construction firms repeatedly promote generic improvement solutions like collaboration, integration, continuous learning and innovation in order to improve performance and become more innovative. These persuasive principles tend to be deterministic in nature: they are sourced from manufacturing and other sectors and are promoted as generic solutions that are applicable to the construction sector. The underlying assumption is that they remain meaningful once they are removed from the context. However, little consideration is given to differences in situational contexts and storylines mobilised by different organisational actors at different points in time.

The purpose of this paper, therefore, is to explain and understand narratives of innovation mobilised by construction sector practitioners. In order to achieve the aim and place the research within the landscape of construction management, the specific objectives of the research are:

- To explain and emphasise the construction-specific context in relation to narratives of innovation mobilised by practitioners.
- To critically review the construction-specific literature on innovation.
- To explain how identities of construction sector practitioners and situational contexts shape narratives of innovation they mobilise.

## **TOWARDS A CONTEXTUAL UNDERSTANDING OF INNOVATION**

The prevailing view on innovation in the construction-specific literature is rooted in positivist and quantitative approaches (e.g. Blause and Manley 2004, Koskela and Vrijhoef 2001), where the emphasis is being placed on influence of definitive variables at different points in time. Whilst these approaches may provide indications of averages across large samples, they often ignore situational contexts and individual perspectives completely or compress them into variables. An alternative "processual" perspective views innovation as an ongoing process shaped by organisational actors and situational contexts (e.g. Hartmann 2006, Sexton and Barrett 2003, Winch 2006), rather than acontextual, apercceptual, objective characteristic that can be determined or measured. The advocates of the more or less processual perspective emphasise the importance of contexts, multiple perceptions and time (e.g. Bresnen and Marshall 2001, Fernie et al 2006). This represents a shift towards a dynamic understanding of innovation, sensitive to individual perspectives and ongoing circumstances.

Recognition of the heterogeneous nature of social processes, multiple perceptions and situational contexts are claimed to be important when conducting any research on the subject. This perspective resonates with a processual (postmodernist) orientation in the management and organisation studies (e.g. Chia 1995, Pettigrew et al 2001).

It is frequently contended in the construction-specific literature that narratives of innovation mobilised by organisational actors cannot be understood in isolation from the situational contexts (e.g. Harty 2005, Larsen 2011, Leiringer and Cardellino 2008). It is argued that construction has some specific characteristics which make it distinctive from other sectors. Harty (2005), for example, identified five features to understand the construction contexts into which innovations are introduced: the collaboration upon which construction work is based, project-based nature, the

importance of communication and inter-organisational relations, and the way power is distributed. It is frequently argued in the construction-specific literature that narratives of innovation mobilised by practitioners are shaped by their interpretation, actions and embedded experience (e.g. Harty 2008, Salter and Gann 2003). It is, therefore, important to understand narratives of innovation mobilised by construction sector practitioners contextually.

Critiquing the behavioural decision-making school of research and addressing limitations of the sensemaking school of research, Winch and Maytorena (2009) articulated that some managers perform better than others in identical situations due to the differences in ways in which they solve the problem. It is argued that so-called "social sensemaking" is more appropriate for conditions of uncertainty and ambiguity, whilst "behavioural sensemaking" is more suitable for conditions of risk. Utilising a contextual, practice perspective and incorporating ideas on interpretation proposed by a sensemaking theory, Gluch (2009) used the actors' own narratives to demonstrate how their roles and identities are shaped in construction. Of particular note, it has been demonstrated that narratives mobilised by practitioners are shaped by their roles and identities, and this is an ongoing process that change over time. Utilising a sensemaking perspective, Green (2011) and Green et al (2005) contend that concepts like supply chain management, partnering and innovation cannot be understood in isolation from the broader dynamics of change in the construction sector. From this perspective, narratives may be directed towards the dominant story which may be implausible for practitioners who mobilise them and even unthinkable. However, it is contended that new generation of managers has an opportunity to re-narrate their journeys, and not necessarily repeat the past. Building upon and extending this work, the paper explains how identities of construction sector practitioners and their embedded experiences shape narratives of innovation they mobilise. Grounded in identity construction, a sensemaking framework may offer a more reasonable explanation of the narratives of innovation mobilised by construction sector practitioners shaped by their identities and situational contexts that unfold over time.

## **METHODOLOGY**

Thirty semi-structured interviews with UK construction sector practitioners were conducted between the period of November 2012 and February 2013. The interviewees were directly engaged with Constructing Excellence that is claimed to be the UK construction sector's single organisation for driving the innovation agenda. The Constructing Excellence movement is drawn from all parts of the sector (e.g. stakeholders, clients, users) and is committed to a UK sector-wide approach to improvement through collaborative work. Amongst the important values in the agenda are collaborative working, integration, continuous learning, improvement and innovation.

Construction practitioners engaged with Constructing Excellence have, in some sense, constructed their identities as innovation champions. From time to time they attend events and discuss innovation. Notably, they often play multiple roles: practitioners were actively engaged with Constructing Excellence and promoted the innovation agenda in their organisations. The interviewees were sourced from a variety of the firms: both SMEs or large, main or specialist contractors, consultancies or clients. Of particular note, storylines mobilised by the interviewees were personal perspectives and viewpoints.

## **NARRATIVES OF INNOVATION MOBILISED BY INTERVIEWEES**

### **Meaning of innovation**

A variety of perspectives on definition of innovation expressed by the interviewees was evident. Throughout the course of the interviews, a number of themes and sub-themes have emerged. The majority of interviewees associated innovation with novelty, emphasis that not all organisational changes are recognised as innovations. Novelty was often described as one of the key distinguishing characteristics of innovation. This was articulated especially clearly by a chief executive from a consultancy firm:

*"New idea, a new way of working, a new way of doing something that improves a project, the process, the working life of all the people who work in it and helps the customer, the end-user for better value for their money. Something new, something different".*

From the above quotations it is evident that a chief executive from a consultancy firm provided a more conventional definition that views innovation as a "thing" or an objective entity. Notably, there seems to be inconsistencies within the mobilised narratives. For example, in the above quotation the interviewee defined innovation as a new "thing" or "something". Whilst it seems to be some kind of a material entity or objectivity in there (e.g. new idea, something), at the same time the interviewee pointed towards a processual understanding of innovation (e.g. new ways of working, new way of doing). It is also notable that novelty was consistently repeated across different contexts (e.g. ideas, concepts, ways of working, project, process) in relation to innovation. The contexts represented novelty within narratives of innovation mobilised by most interviewees.

Those interviewees who associated innovation with novelty contended that in the construction sector it is difficult to create something new. They explained that most construction innovations are not new: although innovations in the sector may be perceived as new by people, they tend to utilise existing systems or processes applied to different contexts. For example, a proprietor from an architecture, planning and management services firm provided an explanation of this misalignment:

*"The reality is it is not completely novel. It tends to kind of want to adopt the existing system because the existing system has got 75% of method tighten up into it. It is rarely when you get total newness. But I do not think that is a definition of innovation. Innovation is about thinking your ways of a solution, not trying to find a new solution, and not trying to find a new problem solving".*

In contrast to the narrative mobilised by the chief executive, a proprietor had a much broader view on innovation as thinking of business opportunities. The focus was placed upon individual thinking and viewpoints, emphasising that it is perceptions of novelty that really matter, rather than any absolute definition. Embracement of novelty in relation to innovation was also considered from a slightly different perspective. For example, a project manager from a cost and project management consultancy emphasised that novelty implies risk and uncertainly:

*"I think a sort of novelty element applies to those who is using innovation, other than relating to some kind of absolute measurable whether something new or not. Risk is a*

*core part to approach innovation. At the end introducing novelty is risky and uncertain".*

From the above quotations it is evident that a project manager did not subscribe to any labels, but considered innovation in the context of risk and uncertainty. Another perspective on innovation was described in terms of associated benefits, efficiency and effectiveness. A significant percentage of the interviewees defined innovation in relation to improvements in the business of a company or even the sector as a whole. They claimed that recognition of organisational activities as innovations should be based on values or benefits for the business. For example, a head of business development and marketing from a specialist contractor firm emphasised the importance of improvements across different contexts:

*"A system, a process, a product, a ways of approaching an issue that improves the way that a company or an industry goes about its business".*

It is evident from the above quotation that a head of business development and marketing had a broader view on innovation as thinking of improvements in the business and sector as a whole. Notably, there seems to be misalignments and self-doubts within the mobilised narratives. For example, in the above quotation innovation is viewed from a broader perspective (e.g. system, a process), whilst indicating an objective entity (e.g. product, issue).

A few interviewees viewed innovation as an ongoing process, rather than a material entity or "thing". Narratives of innovation mobilised by the interviewees were often suggestive of an organisational activity that evolves over time. Process of innovation appeared to be fraught with ongoing, changing activities and circumstances. Of particular note, the interviewees used verbal nouns (e.g. approaching, working) over nouns, emphasising dynamism of the innovation process. This tendency was articulated especially clearly by a procurement operation manager from a public sector client firm who contended that innovation is a process that unfolds over time:

*"Moving something from where it was to somewhere that is a better place than it was, and you go through a process to work out how you do that".*

From the above quotations it is evident that a procurement operation manager employed a logistical metaphor of shifting from one point in time into another. This indicates some interesting insights into how the identities of the interviewees and their experiences shaped the way in which they mobilised narratives of innovation.

### **Ontological and epistemological assertions**

Narratives of innovation mobilised by the interviewees were often reflective of the rhetoric of a positivist storyline. However, it should not be confused with being rooted into a positivist paradigm. The interviewees often suggested a necessity of measurements of innovation. For example, a commercial director from a highway maintenance, bridge and road design council articulated a positivist storyline:

*"Every time we came up with these ideas we had to do a business plan to measure the effectiveness of it, the cost of it, did the trial work and then to work out the benefits of it because it was financial reward for partners, depending who came up with an idea".*

Positivist storyline reflected and reinforced assertions about an objective nature of innovation. In some sense, products were emphasised over activities, continuity over novelty, entities over processes, and determination over flux. Limited attention has

been placed upon any reference to multiple perceptions by individuals and of situational contexts.

The narratives mobilised by the interviewees were often reflective of the rhetoric of a postmodernist storyline, but it should not be confused with being rooted into this rhetoric. Novelty was often emphasised over traditions, processes over entities, perceptions over determinism. The interviewees frequently used verbs over nouns in order to explain dynamism and complexity of ongoing social processes. The narratives shifted beyond the object-subject duality, emphasising power relations, construction and re-construction of identities over time. For example, a planning manager from a consultancy, maintenance and construction firm articulated especially clearly a postmodernist storyline:

*"I think it was the case of being innovative in the sense you want to do things better and differently: borrowing other peoples' ideas, tricking them, modifying them, putting them into your own organisation. But you are doing it in a progressive way and you need a lot of support to do it".*

Notably, narratives mobilised by the interviewees have demonstrated inconsistencies and misalignments: a mixture of positivist and postmodernist storylines, even through the course of single interviews. As was evident in the previous section, whilst some interviewees defined innovation as some kind of a material entity or "thing", they often pointed towards a "processual" understanding of innovation. One possible explanation of inconsistencies and misalignments is to look through a lens of identity construction. Theories that view identity as socially constructed frequently argue that people may represent different combinations of ontological and epistemological assertions about the nature of organisational phenomena (e.g. Alvesson 2010, Sveningsson and Alvesson 2003). From this perspective, narratives of innovation are multiple and may change over time as circumstances unfold – going one step further – the process unfolds through snapshots of entities at different points in time. A person may mobilise multiple identities and have multiple roles. Thus, one should not expect that the interviewees would display deeply-rooted ontological and epistemological assertions.

### **Examples of the innovation projects described**

The innovation projects described by the interviewees represented a variety of contrasting perspectives. Applications of Building Information Modelling (BIM) were often described as innovations or as being innovative. For example, a supply chain manager from a client construction firm described 3D modelling for rail as being innovative. A business improvement manager from a water division, on the other hand, described the first application of BIM in water sector as innovative. This tendency was reinforced by a head of BIM from a construction firm. He described engagement every stakeholder in the process of using BIM as innovation:

The issue with BIM at the moment is producing a lot of geometric data and information. This is coming from consultants, trades, suppliers – a lot of different sources. The government aims to deliver asset management set of information. Senior managers looked at the current process and identified a gap: there is no quality assurance at all to actually guarantee whether it will improve the consultants, geometrically correct and the right information. They researched the market and identified one technology product that was brought in from another country. But rather than just bringing to the company's use, they are encouraging consultants to

engage with the process. The idea is to actually bring everybody into this process, aiming to validate the information moving forward as a business.

It is evident that the first two examples of applications of BIM to different contexts, in some sense, are more tangible (e.g. software, technology). They presumed some sort of a material entity in there. However, the last example of BIM, in some sense, has both tangible (e.g. technology product) and intangible elements (e.g. a process, engaging everyone). This project was framed tacitly and compellingly as another aspect of the innovation – a social process, a sort of “living entity”. The emphasis was placed on verbs over nouns, explaining dynamism and complexity of processes.

Notably, the interviewees situated in particular contexts (e.g. rail, water divisions and developing infrastructure respectively) which shaped the narratives of innovation they mobilise. From this perspective, there is a meaningful connection between the narratives mobilised by the interviewees and the situational contexts. The interviewees reacted and shaped the environments they experiences - they were part of particular contexts. From this perspective, contexts are not fixed or detached from the individuals, their perceptions and actions. Rather people react to situational contexts through their interpretations and actions, whilst their perceptions and actions shape the contexts.

### **Contextual understanding of innovation in construction**

Many interviewees recognised that construction-specific characteristics shaped their perceptions on innovation. A project manager from a general consultancy firm articulated especially clearly that situational contexts shape perceptions on innovation:

*"There are big market, economic issues for construction. Because it is low margin business, it is a project-based business. For all kind of reasons it is difficult to transfer learning from project to project. Construction people tend to reinvent from project to project. There is a lack of continuity. Cycle of construction is discontinuous because it is project-based. On the other hand, construction provides a very kind of positive environment for innovation. Projects are unique, there are unique problems to solve that goes on quite regularly in construction. Some people do not see it as innovation: new designs. It does not innovate so much in terms of developing new products, but it does innovate quite extensively at the day to day problems because of its uniqueness".*

The above quotation clearly emphasised that innovation cannot be understood without a reference to situational contexts. It was contended that construction has specific contextual characteristics that are unique from other areas and other sectors. The nature of the construction sector was described as discontinuous and project-based. Learning from project to project was emphasised to be difficult because of their temporal nature. One the other hand, the uniqueness of construction projects was claimed to regularly require innovative solutions. Sensitivity to contexts was considered to be important by many interviewees, drawing attention to the situated nature and individual perceptions of the contexts. The interviewees pointed out towards a need to understand innovation within the construction-specific landscape.

From this perspective, context is by no means a static entity because it concerns highly dynamic, ongoing circumstances and multiple perceptions. The interviewees made sense of uncertain, ongoing circumstances in ways that responded to their own needs and expectations. They searched for meanings and interpretations whenever situations were perceived to be different from their expectations. This was articulated

especially clearly by a strategic business manager from a software engineering firm who argued that:

*"I think perceptions of this are definitely changing over the time. The first projects we hated because it is different. They found it very frustrating because it is not the same. But ultimately once they got use to that and they are doing it regularly, it becomes the standard practice, rather than the innovative practice. That makes a start, it becomes a second nature".*

Notably, the preceding quotation pointed towards ongoing processes of struggling, contradictions and uncertainty (e.g. frustrating, changing). One explanation of differences in making sense of innovation is that the interviewees' interpretations are shaped by multiple, individually and contextually-specific, assertions. Clearly, positivist, reductionist perspective is unable to provide a reasonable explanation of emergent contradictions, misalignments and dynamism of self-identities.

Understanding of identity as unstable, ambiguous and sometimes contradictory process provides a more reasonable and convincing explanation of the ways in which the interviewees made sense of innovation. This resonates with those construction management researchers who argue that identities of construction sector practitioners and situational contexts shape their storylines, and can change over time (e.g. Gluch 2009, Green et al 2005, Raja et al 2010, Winch and Maytorena 2009).

Although not necessarily considered under a processual (postmodernist) perspective label, a sensemaking theoretical lens explains how identities and situational contexts shape narratives mobilised by practitioners, and how they unfold over time (e.g. Weick 1995, Weick et al 2005). Sensemaking deals with search for meaning in situations of uncertainty, answering a question "the same or different?" When the situation is perceived as different the efforts are made to construct plausible senses of what is happening in order to enable projects to continue and become legitimised. A sensemaking is claimed to be a significant process that explains how the interviewees' own perceptions and target audience shape how they interpret situations and their actions. Far from being a material entity that can be determined by variables, innovation is, perhaps, more reasonably and convincingly understood as an ongoing process of making sense.

## **CONCLUSIONS**

One certain conclusion that arose from the empirical data was that different interviewees mobilised narratives of innovation in different ways, grounded in their identity construction and situational contexts. The narratives of innovation mobilised by the interviewees often revealed ongoing inconsistencies, misalignments and conflicts: a mixture of the rhetoric of positivist, social constructionist and postmodernist storylines was often evident, even through the course of single interviews. It has been contended that construction sector practitioners made sense of innovation through the narratives they build upon. Their interpretations were prone to multiple ontological and epistemological assertions that are individually and contextually specific.

Theories that view identity as socially constructed process have provided a more persuasive explanation of inconsistencies and misalignments, than is available using other approaches that view identity as a fixed or monolithic social entity. Grounded in identity construction, a sensemaking theoretical lens provides a much more reasonable and convincing explanation of how identities of the interviewees and their embodied



experiences shape the narratives they mobilised. The empirical fieldwork clearly demonstrated inability to understand the narratives of innovation shared by construction sector practitioners in any absolute sense from positivist, reductionist perspectives. It has been contended that there is no innovation conceptualisation that exists independently of the narratives that practitioners mobilise in order to understand and enact innovation.

The current research makes a contribution to the construction-specific literature by applying a sensemaking theoretical framework to understand how identities of construction sector practitioners and their experiences shaped their views on innovation. The results of the current research were not based on solitary or limited number of individuals, but were developed through an iterative and rigorous procedure that made use of complexity of the data collected. It is suggested that because sensemaking takes place in everyday interactions, it may be relevant in project lifecycle. Project lifecycle involves various stakeholders engaging in their own and target audience making sense processes. However, it is necessary to recognise that sensemaking processes may differ fundamentally amongst different people in different contexts and at different points in time.

### **Future research directions**

Future research into explaining how identities and situational contexts shape narratives of innovation mobilised by construction practitioners through a lens of a sensemaking perspective may supplement it with more macro approaches. The framework could be expanded upon sensegiving, power relations and institutionalisation. For example, how certain judgements about innovations appear constrained or enabled by formative contexts, organisational rules, laws and regulations. Future research may also investigate the role of Constructing Excellence context in which sensemaking occurs and institutionalisation of the sensemaking decisions. This would provide an explanation of how social, organisational and broader institutional contexts shape narratives of innovation. This may involve a reference to inter-subjectivity (e.g. social, collective processes), generic (e.g. shared understanding, common interests, organisational identity) and extra-subjectivity (e.g. organisational culture, institutionalisation). A more longitudinal research may provide deeper insights into how narratives of innovations mobilised by practitioners unfold over time in other contexts. Future research may utilize different theories (e.g. activity theory, actor-network theory) that could lead to new discoveries of various interconnections and combinations of social theories in, perhaps, a more comprehensive framework.

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