Applying constructivist grounded theory in co-production research: a case study exploring its potential and lessons for construction management research
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Applying constructivist grounded theory in co-production research: a case study exploring potential and lessons for construction management research

Abstract

The last decade has seen a drive within construction management (CM) research for greater collaboration between academia and practice to improve the impact and relevance of research. Co-production, where academics and practitioners are engaged in framing the research problem, theory building, research design and problem solving, provides potential for engaged research which achieves mutual benefits in terms of theory and practice outcomes. To benefit from this trend, CM researchers require to revisit their established approaches. Under explored in CM research, this study identifies the potential of applying constructivist grounded theory (CGT) as an approach that enhance co-production research. The paper provides reflexive accounts of what makes CGT a suitable approach for co-production and presents a synthesis of its application in practice, reflecting on its strengths and weaknesses in the context of co-production. The applicability of the approach is illustrated through a case study on facilities performance measurement in the NHS. CGT contributed in the questioning of the scope and underlying assumptions leading to co-produced research which provided theoretical insight which underpinned guidance for future development by NHS Scotland. The findings indicate that CGT is a well-established, rigorous and reliable approach that is viable for conducting co-production research.

Keywords: collaboration; construction management; constructivist grounded theory; performance measurement; co-production

Introduction

The discipline of construction management (CM) has always sought to provide research with applied relevance for practice and to have an impact derived on shaping the future. However, this aspiration has been widely documented as proving difficult to realise on the scale desired by both academics and the construction industry (Holt et al., 2014; Rigby et al., 2005; Barrett and Barrett, 2003). The past decade has seen a drive from academia and industry to bridge the academia/practice divide by encouraging a move towards engaged research. This has the potential for extending the relevance and impact of research by seeing practitioners as not only the beneficiaries of its outcomes but also a key part of the process, thus advancing both theoretical and practical knowledge with mutual benefit.

The growing trend for engaged research has seen a number of different approaches emerging within the literature. According to Van de Ven (2007), these differ on the purpose of the research study and the degree to which a researcher examines the problem domain. The researcher can be either, a detached outsider of the social system being examined but solicits advice and feedback from practitioners on different research activities; or internal participants reflecting their positionality, and the power and activities are shared with practitioners to co-produce basic knowledge, with a research question of mutual interest. Co-production research is growing in recognition to promote engaged research and fits with the latter.
Co-production is a type of engaged research that builds on Mode 2 of knowledge production put forward by Gibbons et al. (1994), and is characterised by five attributes: context driven, transdisciplinary, heterogeneity and organisational diversity, reflexivity and quality control. This form of knowledge brings together different disciplines and skills for short periods of time to work on specific problems in real world contexts. It requires the researcher to be an ‘insider’ rather than being an ‘objective researcher’, and for practitioners to act as active participants in the research process, rather than being the subjects of the research.

These methodological characteristics, and the need for inductive reasoning where research starts with a question to explore together between academics and practice challenges the applicability of the hypothetic-deductive paradigm which underpins the traditional forms of CM research. The important criticism of deductive approaches is that they lead to disengagement between practitioners and researchers (i.e. practitioners act as research subjects rather than active participants, and researchers are detached outsiders of the social system being examined) (Green et al., 2010). This divorce creates a restricted relationship and perceived barrier between the generated theory and empirical data, and impedes the development of a theory to reflect the social reality of the context in which the investigative study is located (Rahmani and Leifels, 2018; Bell and Bryman, 2007). Advocates of co-production in research such as Holt et al. (2014) argue that it overcomes the practitioners’ perception of academic research as stemming from the ‘ivory tower’ and often not reflecting their experiences of practice. By involving practitioners in the research process a shared investigation can promote an inductive or adductive paradigm as well as mutual understanding resulting in constructing research questions and outcomes.

The drive towards co-production is requiring us to critically examine our approaches. Within the CM research community, the likes of Rooke and Rooke (2012) and Sexton and Lu (2009) have already explored the potential of existing methodologies for overcoming the limitations associated with co-production research; whereas others have developed new approaches around Grounded Theory (GT) (Rahmani and Leifels, 2018; Green et al., 2010). Despite this, the potential offered by the constructivist grounded theory (CGT) approach proposed by Kate Charmaz (2006, 2014) is underexplored in CM research. This approach builds on the pragmatism which underpins GT and is informed by the social constructionism that stresses social contexts, interaction, sharing viewpoints and interpretative understandings (Charmaz, 2006). CGT represents the potential for CM to aid engaged research due to its ability to seek theory development from practice, offering potential for co-production due to its approach to reflexivity between the theory and practice context. This enables academics and practitioners to work together in shaping the research and co-produce knowledge. Although this research approach is well established in other strands of management research, its use is still limited by CM researchers.

This paper seeks to demonstrate the potential offered by CGT to help promote the development of theoretical and practical knowledge through co-production research between academia and practice in the field of CM. The paper draws on an example of research that explores performance measurement in the context of healthcare estates management in the National Health Services (NHS) in the UK. In doing so, we present a synthesis of the application of CGT in practice, and reflect on the benefits and challenges of this research approach when placed in the context of co-production. The research seeks to inform those engaged in co-production within their research through two contributes: 1) to connect CM researchers with a contemporary approach which can promote theory development through co-production; and 2) to illustrate the application of CGT in
practice and provide a series of lessons learnt. This can be especially important for early stage researchers as it can be difficult to successfully apply it, and reflection on this approach is currently lacking in the CM community. The paper is structured as follows. Firstly, there is an exploration of different research approaches that have been advocated as suitable for co-production research by the CM community. Second, an analysis of what makes CGT suitable for co-production research is provided. Thirdly, to demonstrate its use in CM, the example of research of its application exploring performance measurement in the context of healthcare estates and facilities management in the NHS is presented. The paper concludes with a discussion on the benefits and challenges for using CGT and lessons learnt.

**Co-production research in CM**

In CM research co-production is not a new concept and as an applied discipline, the likes of Green et al. (2010) have been arguing that there has always been a natural orientation implicitly towards this form of research. The challenges of enacting this in practice in a formal sense has driven the CM community to examine existing research approaches and in exploring limitations. For example, Rooke (1997) and Rooke and Rooke (2012) made the case for ethnographic as a means to achieving contextualised research; whereas other authors have drawn on action research (Sexton and Lu, 2009), with both approaches having some criticisms. The first has been criticised by Green et al. (2010) for providing little scope to the active engagement of researchers and practitioners in ways which would lend themselves toward the co-production of new knowledge. Yet, knowledge is attributed to actors within the setting, but the methodological task of the researchers is to access this knowledge while avoiding the imposition of meaning and the role allocated to practitioners being predominantly passive. On the other hand, action research, despite the ‘engaging with’ element, an intervention-diagnostic approach is also required in the client’s social setting and not all co-production research might require intervention.

A need exists for approaches which allow active engagement of researchers and practitioners while knowledge is embedded in research settings. As a response, an emerging trend has been to draw on the contemporary evolution in approaches to GT with the turn towards Iterative Grounded Theory (Green et al., 2010) and Abductive Grounded Theory (Rahmani and Leifels, 2018) to close this gap. This is a trend which CM requires to reflect on given the potential to promote engaged research which can lead to co-production whereby patterns within data are interrogated against a succession of theoretical models derived from the literature. A point of interest here is that CGT has not been specifically explored in CM and we argue that a strong potential exists to promote its contribution to co-production in research.

**What is it about CGT that works with co-production research?**

GT is widely regarded as an approach to build theory, which is derived from continuous interplay between data collection and analysis about issues of importance in people's lives (Glaser, 1978). The CGT approach advocated by Charmaz (2006) has emerged as the major alternative to the earlier Classical (Glaser, 1967) and Modified (Straus and Corbin, 1998, 1990) versions of GT, but as a difference to these Charmaz advocates adopting key GT strategies that are devoid of their positivistic underpinnings (i.e. the discovery of an external reality, an objective social scientist, questing for explanation and prediction, and ensuring of how the conditions of the research process including the researcher’s experiences and subjectivities affect the research process) (Charmaz and Bryant, 2008). Instead, Charmaz’s CGT approach takes a relativistic view and
makes the following assumptions: (1) reality is multiple, processual, and constructed, but constructed under particular conditions; (2) the research process emerges from interaction; (3) it takes into account the researcher’s positionality, as well as that of the research participants; (4) the researcher and researched co-construct the data (i.e. data are a product of the research process, not simply observed objectives of it) (Charmaz, 2008). We argue that these assumptions satisfy the basic requirement of co-production research in that, how reality is constructed, the abductive interference (reasoning) during delivery and its flexibility, the treatment of theory, and the stance of doubt/criticality that is encouraged.

**How reality is constructed**

Charmaz advocated multiple, processual and constructed realities, and that this allows for the researcher’s position, privileges, perspective and interactions to be taken into account as an inherent part of the research reality (Charmaz, 2006). To the extent possible, constructivists enter the studied phenomenon and attempt to see it from the inside, being part of what is viewed (Charmaz, 2011a). They cannot separate themselves and their experiences from their research or be objective about the data. Instead, what observers see and hear depends upon their prior interpretative frames, privileges, positions, their interactions with research participants, geographical locations and modes of generating and recording data (Charmaz, 2001, 2009). In CGT, subjectivities matter, values shape what stands as fact, and data is co-constructed through the researchers and participant’s interaction (Charmaz, 2011a). In other words, researchers’ findings are not representative of a true, discoverable reality, but are interpretations of multiple realities ‘mutually constructed by the researcher and the researched’ (Charmaz, 2011b).

As researchers, Charmaz assumes that a participant has also a socially constructed reality that serves as the data. They construct local meaning about reality to understand and act on it within their immediate context (Charmaz, 2014). Constructivists aim to create interpretative understanding located in these particularities of space, time and situation of their production, rather than constructing concepts abstracted and separated from their origins (Charmaz and Bryant, 2008). Thus, striving for local and contextual knowledge about phenomena. In simple words, Charmaz sees reality as socially constructed, therefore positioning the researcher as an insider, and the research is produced in context. These concerns involve constructivist grounded theorists in reflexivity throughout inquiry as an integral part of the research process (Charmaz, 2011a), and this aligns with the Mode 2 of knowledge production’s requirement of being reflexive through inquiry.

**Abductive reasoning**

CGT brings people and their perspectives into the foreground, and how this is done resembles the pragmatist logic of abductive reasoning (Charmaz, 2017a), which is central to theoretical sampling. In simple words, theoretical sampling is abductive. Theoretical sampling is a major GT strategy that means gathering additional data to fill out the properties of an emergent theoretical category (Charmaz, 2020). The term abduction originates in the work of C.S. Peirce who considered it to be the only way in which novel insights might arise (Bryan and Raja, 2014). For Charmaz, abductive inference entails considering all possible theoretical explanations for the data, forming hypotheses for each possible explanation, checking them empirically by examining data, and pursuing the most plausible explanation (Charmaz, 2006, 2012). After the researcher examined cases, a logical inference is made that offers a theoretical interpretation of the
relationships between these cases, and then return to the field to check and evaluate the inference (Charmaz, 2006). The abductive logic of theoretical sampling strengthens the categories and affords them more theoretical reach (Charmaz, 2012).

It is this abductive interference of the theoretical sampling that provides the conditions for co-production beyond the traditional researcher-participant relationship. In a participatory action project conducted by C. Hense (cited in Charmaz, 2020) the author found the abductive reasoning of theoretical sampling as the opportunity for young people to challenge his assumptions, pushing the theory in ways that would not have occurred on his solo analysis. Participants had power to influence and change the constructed theory, as well as benefit from knowledge gained in the process. Elsewhere, Gold (2011) also stated the opportunity abductive reasoning brings for researchers to scholars to engage with practitioners in the co-creation of knowledge. Indeed, Jensen (2008) pointed out that it is only with abduction that the interchange between researcher and informants (can serve to) establish (infer) relevant categories and concepts.

This research suggests that the abductive method is also useful for problem framing and this presents it as an option for aiding co-production research as there is not always a research problem defined upfront. Indeed, Green et al. (2010) argued that in CM research, when embarking on co-production of knowledge between academia and practice there should not be a fixing of objectives in advance enabling the early stage of the research achieving complete clarity of the problem and context before entering the field. The setting of the research objectives and the associated scoping of the research are ongoing activities that evolve as the research progresses and from the close interaction between the researchers and practitioners. This is important in order to define a research question of mutual interest and thus avoiding two shortfalls in engaged research. On one hand, the production of theories that tends to be insufficient grounding in concrete particulars and lack of relevance as perceived by the intended audiences or users of the research (Van de Ven, 2007). And on the other hand, ending up delivering research that is closer to consultancy work (i.e. contractors specify the problem to be studied and the form of deliveries expected). Abductive reasoning presents an opportunity to facilitate this process, and the authors argue that CGT provides an approach which can support this.

Treatment of the extant literature

In co-production research, mobilising existing middle-rage theories for the purposes of sense-making has been argued by Green et al. (2010) as essential to build an instrumental theory based on empirical data. According to these authors, sense making in the context of co-production describes an ongoing process of creating situational awareness and understanding in situations characterised by ambiguity and complexity. In many cases, this involves progressively interrogating the data through a succession of theoretical lenses derived from the literature. Charmaz, at difference from the traditional approaches to GT, emphasises the review of the literature for theoretical sensitivity; however, her stance regarding the continuous engagement with existing theories in the analytical and theoretical sampling process is not emphasised significantly in her work. Despite this, some of the examples she has used to demonstrate the potential of her approach to GT, showcases that she agrees with the use of the existing theory to spark new questions and ideas throughout the research in order to explore specific codes/categories. Rather than being a tabula rasa, constructivists advocate recognising prior knowledge and theoretical preconceptions and subjecting them to rigorous scrutiny through reflexivity (Charmaz, 2006).
Flexibility of the method

Co-production requires of a method that provides certain degree of flexibility to allow the design of new collection methods or to investigate new line of inquiry as result of the interactions between researchers and participants. Participants might provide materials that were not anticipated collecting, inform of organisational records that might be relevant, or invite to read specific publications that can further the research ideas and generate questions that were not anticipated. These might require of construct data gathering methods and to revise earlier ones. CGT offers this flexibility. It places priority on the studied phenomenon rather than on the methods of studying it; and encourages researchers to be willing to alter the research questions when discovering that other questions have greater significance in the field (Charmaz, 2014). Yet, it adopts GT strategies as useful tools, but not as rigid prescriptions (Charmaz, 2001).

Adopt a stance of doubt/criticality

Co-production research should not be mistaken for consultancy work where priority is placed on the practice based outcome. Instead, it represents a more critical approach that offers the potential for theory development which provides mutual benefits for academics and practitioners. Thus satisfying the demands of academic advancement, especially if resulting academic papers are to achieve publication in high impact journals. The abductive reasoning of CGT has the potential to provide this level of criticality, allowing the experiences of practitioners to be considered in line with existing theory through an iterative reflective process. CGT invokes doubt about the analyses throughout the research process which is key to promoting critical questioning of both theory and practice. It keeps researchers involved in the research process by encouraging them to raise critical questions throughout the duration of the research from the beginning of the data collection through the analysis and the writing. Adopting a stance of doubt and engagement not only fosters increasing the theoretical depth and help to sharpen the analyses, but also stimulates recognising and revealing a nascent critique that otherwise may have been invisible, increasing as result the influence of the research undertaken (Charmaz, 2017a).

Constructivist grounded theory in practice

The research explores performance measurement in the context of healthcare facilities management. This was research that emerged from the ongoing collaborative work between NHS Scotland and the Built Environment Asset Management (BEAM) Centre at Glasgow Caledonian University (GCU). Spanning a number of years, this collaboration has resulted in a number of research projects in different built environment disciplines each seeking to provide mutual benefit to both partners with academic outputs (PhD completions, and journal papers) and practice applied reports providing guidance and solutions. Projects are established through regular project development meetings where ideas are exchanged and teams established. In this case, a perceived problem was brought to one of these workshops by the organisational partner who wanted to enhance the value that is delivered from their healthcare estates, and to do that they wanted to revisit their estates and facilities performance measurement system applied across the NHS Scotland health boards. Specifically, they wanted to validate, or (if required) improve their performance measures, and establish national ‘optimal’ performance targets to help inform better decisions. The performance measures cover areas such as physical condition, backlog maintenance cost, functional suitability, statutory compliance, energy and environment and facilities management financial related measures. Their performance measurement system is
important for ensuring the health boards can plan their capital investment around the healthcare estate through planned and reactive approaches to refurbishment, renovation, and new builds.

Establishing a co-produced research scope and design

A series of questions were brought by the organisational partner to the initial discussions which they perceived as solutions to this problem, shaping a view as to how the research methods and outcomes should be formulated. A project team was established involving an academic lead and organisation’s research manager, with a steering group of wider members of both organisations with an academic researcher employed to deliver the research over three years and who would be embedded within the organisation and jointly supervised. Figure 1 illustrates the relationship between the collaborating partners demonstrating co-production.

Figure 1: The relationships between the collaborating partners

In order to provide an awareness of the theoretical underpinning to this initial line of questioning, the academic researcher conducted a literature review to understand the landscape of performance measurement in the field of estate, asset and facilities management in relation to healthcare. This was alternated with five informal interviews with four participants from the health boards on their perspectives on the value of the current set of performance measures and the usefulness of setting national targets/benchmarks as means to inform decisions.

As the interviews progressed, data suggested some issues with the current system, which the academic researcher explored further with a more general literature review on performance measurement. As her theoretical knowledge on the topic grew, it was clear that the basis and nature of the initial questions suggested by the organisation partner should be revisited as the underpinning assumptions for the research were not consistent with the theory. It became apparent that, if the theory was interpreted correctly, then the organisational partner held aspirations for the research that were based on a misplace understanding of the problem (i.e. it was not all focused on performance measures, but that focus needed to be placed on whether they represent value for the management of the estate). When presented with this, the organisational partner became invested and the academics worked with them to formulate a new research question which was co-produced and agreed, ‘Does measuring facilities performance contribute to optimise their value? and if so, how?’ This represented a shift from the positivistic solution focused research initially sought by the organisation which was approached similar to consultancy, and instead provided scope for a theoretical contribution due to an identified gap in the literature and emerging unanswered question about how the theory related to practice. By co-producing the reframing of the research, the organisational partner invested in the research in terms of questioning it, reflecting on it and seeking to understand better the contribution that performance measurement could make to the management of their estate, rather than simply revising their performance measures as they recognise that this will not solve the practice based problems currently being experienced.

Reflecting the principles of co-production research, the embedding of an academic researcher within the organisation, was seen as increasingly important as they would get a better understanding of its culture and working practices, quickly learning the terminology and gaining easier access to data and stakeholders, whilst bringing academic knowledge and critical
approaches to the team with a view to developing organisational practices and policies. They felt this was important to enable them to learn and reflect on the emerging findings with a view to shaping the research so that it responds to the real challenges they face in practice. It was also seen as important to encourage real time collaboration by involving the researcher in organisational meetings and discussions both formally and informally. The following sections seek to provide an explanation of the approach taken in this research to applying CGT and introduces several examples of how the researcher used the GT strategies (coding, memo-writing, theoretical sampling and saturation) in the research. This is provided to help showcase the approach prior to a discussion which explores its potential for promoting co-production and allowing for lessons to be established. The academic outputs of the research have been published in conference papers, and fully explored in a published PhD thesis. The report has also been developed and disseminated within the organisational partner with a view to feeding into strategy development and wider management practice. Therefore, showing the research findings is not the emphasis of this paper, but rather it is to showcase the different features that make this approach suitable for conducting co-production research, and exploring the research process which followed.

The emergence of constructive grounded theory as an approach to support co-production

This research initially was presented in positivistic terms by the organisational partner asking the academics to work with them to review and amend their performance measures to reflect best practice. It was the realisation through the review of existing theory that revealed the need to challenge the proposed research question. The desire from the academics to explore theoretical questions in a practice based context, and for the organisation to explore their practice through a more theoretically informed lens created the environment for a more collaborative approach and to adopt co-production due to a recognition of the mutual benefits for both partners. The established relationship between the partners created an environment where the organisation felt comfortable enough to question their own initial assumptions.

Yet, it could be argued that there is extensive literature on the subjects of performance measurement in facilities and estates management, thus making it less suitable for adopting GT. However, recent scholarship suggests that GT is also suitable when existing theories are insufficient in that the relevance of the concepts and their relationships have not been corroborated for the population or the context under study (Vollstedt and Rezat, 2019; Hense and McFerrran, 2016). The underexplored nature of how general theoretical principles around performance measurement applied to this context, especially in a large healthcare organisation, together with the need for a reflexive approach, informed the decision to adopt CGT. Contrasting with Glaserian and Straussian versions of GT, very little has been written about CGT. At the time this research was initiated there was a lack of worked examples that clearly articulate the methods and procedures in practice, specially the treatment of the literature and theoretical framing. The academic team had experience of using GT (both Glaserian and Straussian) but had not engaged in co-production research involving the adoption of CGT, so this represented a new experience for us and we needed to rely on our interpretation of the approach explored in Charmaz’s range of publications.

Research team and practitioners (participants)
As described, the research team was comprised of the researcher, the academic lead and the research manager from the organisational partner. The last two were not directly involved in the data collection and detailed analysis, with their role being related to provide guidance and access to data, sense checking, and drawing questions and conclusions from the analysis. This was important in terms of keeping the researcher focused on the data and less influenced by the agendas and priorities of those she was working with in the workplace setting.

The research participants included two senior members from the organisational partner who were responsible for developing and delivering a high level national strategy, and eighteen practitioners representing local delivery within individual health boards, with a key role in the planning, and the operational and strategic management of the healthcare estates. Participants were not involved in data analysis; instead their role as co-producers of knowledge were to provide direction and influence the formulation of the problem and theory development through the interviews and theoretical framing. The two senior members, despite being participants, they were also involved in research design and dissemination, responsible for agreeing the research question, and suggest the practitioners suitable for partaken in the research.

Although the focus was on the NHS Scotland, the research also included interviews with six practitioners from NHS Northern Ireland with similar roles as those in NHS Scotland. NHS Northern Ireland has a similar estates and facilities management approach and a performance measurement system as the NHS Scotland. This was not part of the initial research plan, but after a series of interviews the researcher perceived the risk that some of the responses from the initial participants may not reflect their real opinions over fear of saying the wrong thing in the eyes of senior management or to reveal too much self-criticism. Conducting interviews with practitioners in a similar role from another national context but with limited vested interest was seen as a way of overcoming self-censorship. These interviews were conducted intercalated with interviews from NHS Scotland, with different interviews conducted at different stages of the process guided/defined by the emerging categories. Data from these interviews were coded together with data from the participants from the NHS Scotland and they brought some connections and explained issues otherwise the researcher may have missed due to their willingness to be more open. Figure 2 illustrates a summary of the stages of the research process. Interviews with participants were not conducted in a linear sequence, as it appears in the diagram, with the order of the interviews illustrated in the three different groups varying due to the iterative nature of the process. Interviews and participants were identified as categories evolved, sometimes required to interview a participant from the organisational partner, followed by other interviews with a few participants from the NHS Boards.

Figure 2: Research Process

Data collection and analysis

The emergent nature of this research meant that the sample was not defined at the outset. As the research evolved and concepts began to emerge, new data sources and collection methods were defined. Data included interview transcripts, field notes about each interview and its setting, informal interview transcripts and notes with other senior members of the organisational partner, documentation, and notes about the context and experiences of the researcher as being embedded in the organisation. A total of 40 interviews were conducted.
Interview analysis began immediately after completion of each interview and its transcript, and as a difference from other strategies of enquiry, data collection and analysis occurred concurrently rather than in a linear sequence. The initial literature review informed the early interview guide; however, no deliberate effort was made to direct or force the data towards any set of pre-defined codes. Open coding was not conducted line by line as recommended by Charmaz, but sentence by sentence, and in some instances through statements, as not every line appeared to be important or contained a complete sentence. The researcher coded in gerunds as much as possible, rather than by themes, as recommended by Charmaz (2011a) in order to see processes that otherwise might remain invisible. She proceeded by comparing codes and defining how they clustered in developing focused codes from them. Moving to focused coding was not an entirely linear process; open and focus coding occurring simultaneously.

As tentative ideas and trends within the data emerged, new interviews were conducted in order to examine these ideas through empirical inquiry. The researcher kept moving back and forth between data collection and analysis throughout. Data and codes were constantly compared and some of the early categories were later modified when compared with data from later interviews. In many instances they were suggestive but not yet definitive, and further data collection, through theoretical sampling strengthened them. Theoretical sampling in the study started when having identified a few categories. The aim was to elaborate and refine them through testing interpretations with the practitioners partaking in the research; forming analytic questions and using deductive logic. For example, when exploring the early category ‘usefulness of performance information’, the initial interpretation of this category contained the codes ‘lacking resources’, ‘claiming subjectivity, and ‘data quality’. When testing these properties in subsequently interviews, one of the participants mentioned that for the performance information to be useful it had to be owned by the health boards as this would achieve a better acceptance and use. This statement was coded with the title ‘owning the system’. The researcher then turned to the data from initial interviews, and explored this code comparing it with previous codes, and it was developed as a category. Then the researcher returned to the field and asked questions to new participants to develop its properties. During the development of some of the potential categories the researcher also saw new gaps in her analysis and she returned to earlier participants to ask further questions and kept writing and analysis. The researcher engaged the academic lead and organisation research manager regularly to allow them to see the emerging code and category structure in order for them to have input and help shape the next steps, whether returning to the data for further interpretation or moving to the next step. Figure 3 shows the process of CGT in a linear manner.

Memo writing was conducted from the very start of the research. In the memos the researcher compared data with codes and codes within codes. Memos were often titled using the codes names. Memo-writing prompted the researcher to study their data and code in new ways, and give a place to consider, question, and clarify what she saw as happening in the data (Charmaz, 2012). The researcher found memos also useful as a place to reflect and question the participants’ reactions to the research and the influence of the setting and context. These reflections became part of the data and were also coded.

Figure 3: Constructivist Grounded Theory process in this research
The use of extant theories and preconceived concepts

The use of extant theories and preconceived concepts played an important role for problem formulation but also for theory building. A series of examples are provided below of how theory helped at different stages and purposes.

Example 1. Some of the focused codes that emerged from early interviews with regard the use of performance information included, ‘showing accountability’ ‘demonstration’ ‘comparing apples with pears’ (in reference to benchmarking), and ‘evaluating performance’. At this point, preconceived concepts from the initial literature review on the purposes of performance measurement were brought to the analysis. The researcher questioned why there was no mention of ‘learning’ or ‘informing decisions’ as part of the process of performance evaluation or benchmarking. Thus, in the following interviews the researcher began to ask questions about the usefulness of performance information for learning and informing decisions, leading to new codes. Ensuring reflexivity with theory during the analysis really helped to explore what was happening within the data and then ask questions about the underlying reasoning (i.e. learning).

Example 2. An emerging concept which went on to shape the theory stemmed from a later interview identifying that current practice for performance measurement was not a high level consideration for the strategic management of the estate. A literature review was conducted around strategic facilities and estates management to help interpret the participant’s statement. The studies conducted by Ware et al. (2017) and Store-Valen et al. (2014) brought new insights for the researcher to explore, such as the ‘function of FM’, ‘the role of the estates at the board’, and the ‘impact of performance in business strategy’. New, more focused questions were formed that explored the implications of these concepts and their relation with the performance measurement system in future interviews. They also made explicit what was implicit in previous statements. The researcher returned to earlier interviews and explored those concepts that were unstated and too implicit to discern initially, and new codes were generated that were tested in future interviews. The emerging concepts and categories were shared at different stages of the research with the participants on an individual basis for sense making.

Example 3. As the research progressed, it became clearer that the role of performance measurement was used as a tool to show accountability. Following this observation, the researchers went back to the literature to explore the concept of accountability in the context of performance measurement. This literature helped to establish the link between the emerging concepts of accountability and the relevance of the performance measures, making these more explicit. This was coded as “the role of performance measurement in accountability” and it developed as just one category.

Example 4. During the later stages of the research an important question began to emerge related to ‘why there was such attachment to performance measurement systems as they often present more drawbacks than benefits?’ The researcher decided to pursue the concept of ‘legitimacy’ in relation to this question. To account for this, she considered various explanations examining the data, and then turned to the literature to examine how other authors treated legitimacy in organisational studies. Theories relating to legitimacy provided the lens to answer the question and the theory was later tested with earlier participants.

The engagement with extant theories helped further the process by facilitating the researcher to identify what was important to the developing theory, providing initial ideas from where to
engage analytically with the collected data and help to explain the properties of categories and concepts. The consideration of literature in this way played a significant role in aiding co-production by eliciting acceptance, doubt and promoted questioning from the organisational partner regarding current practice, specifically helping provide recognition that some of their initial perceptions were found in conflict with this understanding. The experience in this research showed that maintaining an iterative process of an ongoing literature review allowed for an understanding of established theories, and also increased the ability of the researcher to remain more critical and reflect on the emerging concepts and categories.

Dealing with bias and reflexivity

Bringing critical reflexivity to the study was key to help dealing with bias. In research of this nature it was observed that the risk of bias did not rest solely on the researcher but also with her mentors in the research team (i.e. academic lead and research manager) who were not immersed day to day with the data, as well as senior members of the organisation with oversight of the research and its progress, and the participants.

Whilst having a mentor is important, the researcher realised a need to be aware of the influence of a hierarchy and to ensure she took their advice but also questioned it. The researcher conducted the interviews and analysed the data, and therefore had a strong feel for the context of how it emerged and had been able to make connections with literature and practice. The mentors have the potential when discussing emerging data patterns to make their own assumptions about causal links and can potentially impose a view based on their own knowledge, experiences and views. In this research, a confidence emerged between the team to allow the researcher the voice to explore concepts, but also to challenge the observations of her mentors’ interpretations if they could not be supported with the data. This placed a predominance in discussions on the data and plays a significant role in overcoming problems related to imposed bias through hierarchy and ensures that reflexivity is encouraged by all members of the team. This was a strength within this research, but it is clear that the potential exists in other research teams where the mentors exert power over the researcher due to hierarchy and/or a dominant personality. This can result in bias being imposed on the findings which is not fully evidenced in the data or agreed by the researcher who is the closest to it. It is important for the researcher to have the confidence and space to accept or reject the interpretations of the mentors based on the data.

The research team saw the potential for this dynamic when engaging with senior members of the organisation partaken in the research who often sought to steer the interpretation of the data through their own lens. They were responsible for the research and provided the initial research questions to the academic partner, and played a role in how the final outcomes are transferred into policy decisions and disseminated within the organisation. As initiators for the research, they had their own agendas and priorities that they wanted to see later reflected in the constructed categories. They were also participants of the research, which although this had strong benefits for the research, it did challenge the researcher as co-production gave them the ability to shape the research towards their own priorities, such as defining the scope of interview participation, providing direction with focus on specific categories and concepts, or defining the scope of reports.

Whilst engaged in co-production, it was important to recognise that hierarchy plays a role, and that senior members of the organisation can exert power and influence on the research should
they not agree with the findings. Therefore, it was clear early in the process of the need to manage this dynamic or it could impose bias and steer the direction of the research in a way that did not align with the emerging data. Although not perfect, the need for an evidence based approach led the research team to create an environment that allowed them to engage with the senior members of the organisation with data being the primary driver in the analysis and emerging findings. This is important if co-production is to be achieved, and the re-set of the project in the early stages based on evidence from initial data analysis reflects a commitment to this environment by senior members of the organisation. For co-production to be successful, it is apparent that they need to be prepared to work with the research team to let data drive the questions, analysis and findings. If this is not established, then their influence can impose significant bias into the process and harm the co-production but also the CGT approach.

With regard the participants, the research questioned the quality of some of the responses. How did participants see the researcher’s role in the research and the research itself? Were the responses influenced by organisational pressures? These were some of the questions the researcher critically reflected on when analysing the data. It was noticed that the nature of the research (i.e. conducted by an “internal” – embedded researcher – to the organisation) affected inevitably the quality of some of the responses provided by the participants even though the researcher’s role and aim of the research was explained and confidentiality was ensured. This is a risk inherent with the researcher being an insider, and it was observed by Charmaz (2006) who argued the influence of professional expectations on what “should be said” and the exercised subtle power relationships on participants’ stories. In organisational environments, staff attempt to react in a way that ensures compliance with the organisational culture in order to receive recognition and approval (O’Reilly and Chatman, 1996), thereby avoiding contradicting the organisational norms or questioning the actions of other members of the organisation with greater power and higher positions. Researcher’s critical reflexivity, enhanced by being embedded in the organisation, allowed her to gain a better understanding of the organisational pressures, and this was of high relevance to allow the unveiling of what the participants took for granted. This is where interviews with similar participants in NHS Northern Ireland played an important role as they did not share the same pressures and were more open helping to explain some of the responses and participant positions from NHS Scotland.

Being aware of, and critically reflect on the participants’ influences, pressures and power structures, was also essential to produce a theory that was accepted in the organisation and resemble the experiences of the participants, reducing the potential of bias. In agreement with others, we found especially important for this research to pay attention and critical reflect on the power structures inherent to the wider context (Turnhout et al., 2020), the political and social pressures to which decision-makers involved in co-production are subjected to (Cvitanovic et al., 2016), and sources of finding and project motivation (Mitchell, 2015). Through memos the researcher reflected on these elements, becoming data, which was also coded and analysed in a later stage of the research under the lens of institutional theory. Reflecting on how the surrounding historical, social and political structures influence the theory is recommended by Charmaz in her later work when she positioned her approach to social justice research (Charmaz, 2011a). This was an evolution from her seminal work (Charmaz, 2006) where she claims the need for a reflexivity stance which solely fosters researcher’s self-reflection on how their interests, background, positioning and assumption influence the inquiry.
Writing up

As anticipated, those engaged in practice within the organisation were not interested in the detail surrounding the theoretical concepts, and at times the organisational partner would question whether the depth and criticality provided in the written reports was necessary, as their main focus was on the key outcomes. From the perspective of the academic partner and from a methodological point of view, not reflecting criticality, compromises theory development and puts at risk the contribution to the knowledge. For this research, it was important to be pragmatic in order for the organisational partner to accept the final report and for the research to have an impact. Hence, the level of criticality was moderated for the reports provided to the organisation. This reflects a compromise and is handled by the researcher with a shift in wording, soften the language and a repositioning of the arguments, and guided by the organisation research manager’s judgement of what was acceptable in order to ensure it was received within the organisation. A more theoretical and critical level of discussion will be provided in future academic.

Discussion

The paper seeks to explore the potential of applying CGT as a way to facilitate engaged research with the aim of achieving co-production between academics and practitioners in a shared venture. Focused on a case study were the authors embarked on research to explore the role of performance measurement in estates and facilities management in the context of the NHS Scotland, the decision to adopt CGT was taken because the following reasons:

- its ability to help generate a mid-range theory which was lacking in the current literature reflective of the research context;
- its potential to engage both academics and practitioners in framing the problem and theory development;
- its encouragement of reflexivity.

Unlike Glaserian and Straussian approaches to GT, CGT permits a greater level of iteration between the theory and the data, and importantly, it allows for the positionality of the both academic and practitioners to be acknowledged. CGT in terms of its systematic approach provides the potential for theory to play a part in informing the research questions and analysis, as well as helping establish a mid-range theory but within a practice orientated context.

As stated earlier, new methods based on grounded theory for knowledge co-production and contextualised research has been developed by authors of the construction management community e.g. the Iterative GT (Green et al., 2010) and the Abductive GT (Rahmani and Leifels, 2018). Whereas these authors considered the Glaserian and Straussian approaches in their publications, it is apparent that CGT has been underexplored within CM research. Yet, CTG allows the use of extant theories to help the theory development whilst also encourages reflexivity, a feature that is not covered in the discussions of the aforementioned approaches and in our view it is necessary to deal with the risk of bias when bringing theory to the study and from the engagement between researcher and participant. Although some CM studies have recently used the CGT approach, these are still limited, and they seldom provided a productive discussion around the rational for applying it or importantly provide detailed understanding of how it was applied and the benefits and challenges experienced. The focus of this paper has been on the use
of this approach in engaged research emphasising its potential to contribute to theory development through co-production, with the intention of guiding not just those who select CGT in construction management but also in other contexts.

**Lessons learnt**

A constructivist approach to GT lends itself to a collaborative approach where academics and organisational partners work together on the research, but also for practitioners to play a role in shaping the research direction through the interviews. Yet, CGT provides an approach which is systematic by nature, and aligns with the principles of co-production; however, there are lessons that can be learnt and areas for further exploration if we are to establish a stronger understanding of how its application in CM research can promote co-production.

One of the opportunities that this research missed, was to extend reflexivity to collaborative reflexivity that engages practice based participants in social critique of their experiences, personal agendas and the institutional pressures. This was an aspect which became clear to the researchers in the later phase of the research and future studies should consciously engage participants in this process. If the researcher is to retain their ability to be critical they need to cross the boundary of being impartial and a neutral observer and to instead work with the practitioners to address these fears and ensure the ability to be critical is not lost. An example of this is where the researcher could have challenged more the perspective of senior participants who played a guiding role for the research as well as data source. This was achieved to some extent through measures such as advocating evidence based reasoning from theory and data which was helpful to break down some of their preconceptions about where the research should be going; nonetheless it was clear that their vested interests still influenced their contribution. In alignment with Charmaz (2017b), it is important for both researchers and participants to scrutinise where we stand in relation to privilege, power and the specific positions we hold in everyday life. Collaborative reflectivity has been encouraged in participatory research (Hense, 2014) and more recently it has been claimed by Hense and McFerran (2016) when adopting CGT methodology in participatory research. Acknowledging this with the practitioners at the outset as a condition for entering into the research, would potentially help to break down some of these entrenched positions which can limit the depth of their contribution by not enabling their critical reflexivity.

In addition, consideration should be given to the fact that organisations may be sceptical of enquiry which seeks to critically appraise processes which they may feel a vested interest in protecting or avoiding criticism over. As argued, this can unwittingly present challenges when adopting CGT as not maintaining the level of criticality might result on theories that do not guarantee that the theoretical contribution reflects the data. Researchers need to ensure that when the organisation partner wills to participate in research co-production, they attend carefully to the legitimacy, credibility and accountability this entails. Without criticality, there is the risk that the work can become consultancy and end up developing concepts and categories that are pre-conceived and self-supporting.

Whereas adopting CGT does not require the researcher to be embedded in the organisation, and neither does conducting co-production research, we found that the research benefited from this in that it provided the opportunity to the researcher to understand and feel the context in which the practitioners operate, as well as helping explain some of the reactions of participants aiding in the development of some concepts and categories.
Concluding remarks

The paper explores how collaborative research involving academic and practice based partners can be greatly enhanced through co-production as a way of ensuring that both partners gain mutual benefit from the research process. Within this context, presented is the potential of CGT as an approach that allows valuable time for reflexion and can enhance the impact for the research for both theory and practice, thus providing mutual benefit for the partners. CGT encourages the engagement with existing theories throughout the research, underlays principles of contextualised research facilitating the production of theory tailored for the organisation, and aligns with the concepts of knowledge co-production. The findings highlight the importance within both co-production and when applying CGT to understand the nature of the power dynamic between the partners and participants. Essential is the provision of a clear agreement at the inception of the research that an evidence based reasoning approach is adopted, with the ability of all partners to put forward views on the analysis and findings but that these need to be supported through evidence within the data. This is key to ensure that bias is minimised. It is further intended that the research example presented, with the descriptions and lessons learnt, is enough to show the essence of the approach advocated. This will support future researchers in the CM community and in other contexts, when conducting engaged research to identify whether this approach suits their research situation, and if so, to what to attend. Nonetheless, as this paper has shown there is always the potential of improving what CGT can do within this context and the authors encourage explore it further.

References


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