

The practice of ‘managing as designing’

ÇIDIK, Mustafa Selçuk^{a*}; ZERJAV, Vedran^b and PAPAGIANNOPOULOU, Vasiliki^c

^a School of the Built Environment and Architecture, London South Bank University, United Kingdom

^b Bartlett School of Construction and Project Management, University College London, United Kingdom

^c Faithful + Gould, United Kingdom

* Corresponding author e-mail: selcukcidik@gmail.com

Paper no: 352

Recent studies of ‘design thinking’ for management have criticized the current focus on principles and tools of design thinking, for creating an over-simplified view of a complex process. As a response, this paper sets out to study the empirical details of ‘doing designing’ in order to explore what ‘managing as designing’ involves in practice. Adopting a practice-based theoretical orientation, the paper presents findings from the design meetings of three residential refurbishment projects in the UK. The findings suggest that the management of design practices was accomplished through everyday interactions during which the nature and level of uncertainty of various issues were established, and the corresponding adaptive and innovative courses of actions were developed. Based on these insights, it is concluded that ‘managing as designing’ is primarily about facilitation of everyday organizational interactions, and leadership for the reconciliation of various concerns of multiple stakeholders.

Keywords: management, managing as designing, design thinking, practice

Introduction

Over the last two decades, management scholarship and practice have had a continued interest in ‘design’ to find ways of dealing with the challenges of continuous adaptation and innovation under uncertainty (Glen, Suci & Baughn 2014; Marc, 2015). As a result, the concept of ‘design thinking’ has become prominent in management literature. In management literature, ‘design thinking’ predominantly refers to methodologies for creative problem-solving which involve a set of principles and practical tools to be applied to complex, ill-defined managerial issues. However, the current emphasis on principles and tools has caused a lack of consideration of the empirical details of ‘doing designing’ (Luck, 2012), which limits the understanding of what ‘managing as designing’ (Boland, Collopy, Lyytinen & Yoo, 2008) involves in terms of mundane interactions and activities in an organization. The present paper takes an initial step forward to address that lack by presenting explanations about how mundane interactions in design practices enable adaptation and innovation under uncertainty.

Using the observational data collected from the design meetings of three residential refurbishment projects, the paper demonstrates that managerial activities, which enabled innovation and adaptation under uncertainty, were enacted in practice through mundane sayings and doings of design stakeholders during everyday design interactions. The discussion emphasizes the importance of recognizing the role of unfolding everyday interactions for ‘managing as designing’ and reflects upon the definition of ‘managing as designing’ as well as its key practical challenges. It is concluded that ‘managing as designing’ should be primarily and equally concerned about (i) facilitation of the interactions among stakeholders to support knowledge



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representation and negotiations, and (ii) leadership to reconcile the different opinions and concerns of various stakeholders. It is also concluded that more practice-based studies of 'doing designing' are required to further establish what 'managing as designing' involves in practice and to develop strategies for leading and facilitating everyday organizational interactions from a design perspective.

Design thinking and management

In the last two decades, design thinking has gained popularity as an approach to deal with complex challenges of practice in a variety of fields including education, medicine, and business (Dorst, 2011). In the world of management, design thinking has attracted significant attention as a response to the increasing complexity of markets and technologies, within which present day organizations strive to achieve and maintain competitive advantage (Owen, 2007; Kolko, 2015). The main promise of design thinking for management has been identified as enabling innovative problem-solving (Liedtka, 2014) for 'wicked problems', which are characterized by high ambiguity, complexity, multi-facetedness, as well as involvement of multiple stakeholders with loosely defined goals and constraints (Liedtka & Ogilvie, 2011; Glen et al., 2014; Elsbach & Stagliani, 2018). Wicked problems are seen as distinct from so called 'tame' problems which can be defined in homogeneous and non-ambiguous ways, and thus lending themselves to straightforward, optimal and/or standardized solutions (Coyne, 2005). The challenge with wicked problems is that, as initially suggested by Rittel and Webber (1973), their resolution does not have a definitive formulation, and rather relies on intuition and creativity because "the information needed to understand the problem depends upon one's idea for solving it" (p. 161). As a result, design thinking has attracted growing attention in the management world by providing a perspective (Owen, 2007; Dorst, 2011) and an accompanying methodology (Tschimmel, 2012) for enabling and exploiting the intuition and creativity required for dealing with 'wicked' managerial challenges.

However, as recognized by Owen (2007), and Elsbach and Stagliani (2018), if the nature of managerial challenges were imagined on a spectrum with 'wicked' and 'tame' at its opposite ends, any managerial challenge would invariably fall between the two extremes. As a consequence, in practice, design thinking in a managerial context does not imply total exclusion of analytical (i.e. inductive/deductive) thinking but rather the need for skillfully combining both creative and analytical approaches in tandem, depending on the evolving circumstances of the challenge in hand. The need for iteration between these two distinct logics is also apparent in the studies that investigate design thinking methodologies (e.g. Tschimmel, 2012) and those that conduct design thinking experiments (e.g. Seidel & Fixson, 2013). Along those lines, previous work on design thinking in management has established that this process of iteration is highly erratic (Beverland, Wilner & Micheli, 2015; Elsbach & Stagliani, 2018) and fraught with social, cultural and political challenges (Björgvinsson, Ehn & Hillgren, 2012; Beverland et al., 2015; Kupp, Anderson & Reckhenrich, 2017), which advises against the use of standardized prescribed management scripts.

Although there is a growing volume of research on design thinking in management, there is a paucity of guidance on how to navigate the unfolding situations in practice in order to effectively accomplish the needed iterations (Kimbell, 2011, 2012; Carlgren, Rauth & Elmquist, 2016). As a result, a concern is voiced that the current understanding of design thinking in the management context adopts relatively superficial (Johansson-Sköldberg, Woodilla & Çetinkaya, 2013) and step-wise (Howard, Senova & Melles, 2015) representations of a complex process (Kupp et al. 2017). An important critique is that more focus is needed on the circumstantial and empirical details of design thinking in the management context, because this would provide a better understanding of how meanings are created and decisions are made as situations unfold in practice (Johansson-Sköldberg et al., 2013; Marcus, 2013; Carlgren et al. 2016).

Methodology

The research presented here explores how design thinking enables the management of ill-defined situations in practice. To this end, the paper studies how management was enacted in the observed practices of three construction design projects using a practice-based theoretical approach (Feldman & Orlikowski, 2011). A practice-based theoretical approach suggests that social reality is produced by peoples' actions in situated organizational practices (Orlikowski, 2010). This means that 'management' is not seen as a punctual or distinct act, and neither as performed by distinct individuals called 'managers'. Rather, management, like any other practical undertaking, consists of a set of empirically observable everyday actions and interactions that unfold in certain ways, thus leading to certain outcomes. Key to the adopted theoretical orientation is the relational epistemology (Emirbayer, 1997), which suggests that in practice, entities do not belong to universal categories

with fixed properties but rather gain their meanings as a result of the unfolding organizational whole of which they are part. This suggests that the world is composed of events and experiences rather than distinct entities, and each event arises out of, and is constituted through, its relations to other events (Langley, Smallman, Tsoukas & Van de Ven, 2013).

To explore what ‘managing as designing’ involves in practice, the research studied the design meetings of three high-end residential refurbishment projects in the UK. The architect was the same firm in all three projects. The observed projects were delivered to private clients who were by and large inexperienced, which made the role of the architects key in the management of these design projects. Observations for this research started after the completion of a year-long internship as Architectural Assistant in the observed firm, which provided the required interactional expertise (Collins, 2004) to make sense of the observed practices. This previous hands-on experience was also essential for the purposive sampling that was used.

Data collection mainly took place through two types of observation during the regular weekly design meetings of the projects. The first type of observation is passive observation whereby the researcher only observes decision-making and does not interrupt the process, allowing the researcher to observe instances and interactions that others within the cultural system cannot (Dainty et al. 2010). The second type of observation is participant observation whereby the researcher becomes part of the decision-making process and has the opportunity to interrupt when necessary. Becoming a participant involves being part of the cultural system, which in turn translates into a better first-hand experience of the organization (Lloyd & Deasley, 1998) and better comprehension of the decisions being made (Millen 2000). Besides the two types of observations, the researcher extensively took notes, as a tool to evoke memories of the events later and as a means of interpreting the events after further consideration (Jackson, 1990; Pink, 2005). Alongside participating in meetings and analyzing the minutes and e-mail correspondence, the researcher was also engaged in reflective conversations with the relevant informants in the case study organization. Data collection was carried out over a one-month period. Within this month the researcher attended seven meetings, which lasted approximately three hours each, so a total of twenty hours was observed. Each meeting had subsequent minutes produced by the project architects and following emails which would question any decisions that were misunderstood or altered after the meeting. The data collection method for the research is represented in Table 1.

Table 1: Data collection method

<i>Projects</i>	<i>Data collected</i>
Project 1	<ul style="list-style-type: none"> - 2 Meetings, each approximately 2.5 hours long. 1st Meeting: (Architect, Client at the client's house) To discuss the design with the client - a combination of passive and participant observation techniques used. 2nd Meeting: (Architect, Client at the office) The purpose of the second meeting was to discuss progress – passive observation technique used. - 2 Subsequent meeting minutes - written by the architect (after each meeting). - 3 Emails, regarding follow up queries from the meetings.
Project 2	<ul style="list-style-type: none"> - 2 Meetings, each approximately 3 hours long. 1st Meeting: (Architect, Contractor, Basement Specialist at the office) To discuss about pipe problem – passive observation technique used. 2nd Meeting: (Architect, Contractor, Basement Specialist at the office) To cut costs – participant observation technique used. - 2 Subsequent meeting minutes - written by the architect (after each meeting). - 2 Emails, regarding follow up queries from the meetings.
Project 3	<ul style="list-style-type: none"> - 3 Meetings, each approximately 3 hours long. 1st Meeting: (Architect, Contractor, Engineer on site) To generally discuss design issues – passive observation technique used. 2nd Meeting: (Architect, Contractor, Engineer, Client on site) To discuss design with client - combination of passive and participant observation techniques used. 3rd Meeting: (Architect, Contractor, Engineer, Client on site) To discuss progress - a combination of passive and participant observation techniques used. - 2 Subsequent meeting minutes - written by the architect (after each meeting). - 1 Email, regarding follow up queries from the meetings.

The research uses qualitative content analysis to develop insights into the practice of ‘managing as designing’. Drawing upon Schreier (2012), initially two themes of exploration are selected following a deductive strategy that draws upon the adopted practice-based theoretical orientation. These themes are ‘establishing uncertainty in practice’ and ‘the practice of innovating and adapting under uncertainty’. After the selection of the themes, the themes are developed based on the sense that the researcher made of the collected data. Hence, in line with the analysis, as well as the practice-based theoretical orientation, in the following section, the two themes are presented through a set of events. The implications of the themes are then discussed to reflect upon the definition and challenges of ‘managing as designing’ in practice.

Findings

In this section, findings of the research are presented under two themes. The first theme is ‘establishing uncertainty in practice’ and the second theme is ‘the practice of innovating and adapting under uncertainty’. Using practice-level interaction data, the first theme demonstrates how uncertainty was experienced, judged, and organized in everyday design practices. Building upon the first theme, the second theme then demonstrates how innovation and adaptation were accomplished in practice based on the previously established understanding of the uncertainty. Importantly, when considered together as an ongoing cyclical process, the two sets of interaction provide a practice-based view of ‘managing as designing’ showing how establishing the problem (i.e. establishing uncertainty) is part of developing a solution (i.e. innovating and adapting under uncertainty) and vice versa.

Establishing uncertainty in practice

Findings from the observed meetings suggested that, in design practices, practitioners established the nature and extent of the uncertainty of an issue through their interactions with others. For example, Event 1 below, which is from a design review meeting between an architect and a client, demonstrates that when the issue in hand was straightforward for all the interacting parties, decisions were made quickly without experiencing any uncertainty. Decisions like this did not even appear in the minutes of the meeting, as the minutes mainly captured pending decisions due to some sort of ongoing uncertainty.

Event 1 (Project 1 – Meeting 1, 100-103)

100	Client	Do we need a USB portal for the sockets?
101	Architect	Better to have the option, won’t change size and the cost will be minimum.
102		
103	Client	Great. Let’s do it.

On the other hand, uncertainty was experienced when one or more of the interacting parties did not know enough about the issue in hand to agree on a course of action as shown in the following event from the same meeting.

Event 2 (Project 1 – Meeting 1, 250-257)

250	Client	Budget is critical, maybe we shouldn’t have under-floor heating if it means that we have to remove all the radiators. Also, if we keep the radiators where would they go? How much is underfloor heating?
251		
252		
253		
254	Architect	We will see the quotation at tender, not sure from the top of my head. We could get rid of another costly element. However, it is difficult to make the decision now without having further information of the costs.
255		
256		
257		

As Event 2 demonstrates, such interactions did not merely reveal the presence of an uncertainty which hampered decision-making, but also they were the means to establish the nature and extent of the uncertainty. By establishing the uncertainty of the issue in hand, these interactions also determined the possible (and acceptable) ways forward. In Event 2, the decision about the heating system could not be made due to the uncertainty about the cost of various heating-system options, and this diagnosis led the interacting parties to postpone the decision until they see the quotations in tender.

The events below (Events 3 and 4) present interactions from the same design review meeting (A1, 340-354) and from the follow-up email (E1, 10-19), and provide another example of establishing uncertainty through interactions which then suggests an agreeable way forward. Similar to the previous event, the uncertainty is established to be about the cost implications of alternative design solutions. However, in the events below, it becomes apparent that the architect had multiple considerations when judging the nature and extent of the uncertainty as opposed to the client having one major consideration, which was the cost.

Event 3 (Project 1 – Meeting 1, 340-354)

340	Client	See here, on this elevation, there is glass covering
341		the staircase. Would it be possible to expose the
342		staircase? Wouldn't this make it cheaper?
343	Architect	You need the fire glass so as to isolate the basement
344		from the ground floor, allowing the space to be fire
345		protected.
346	Client	Isn't fire glass more expensive? Could we have the
347		separation of the floors at another point?
348	Architect	No. But perhaps we could redesign the stairs so that
349		there isn't such a large area with glass. So we could
350		have glass in the basement and then only a glass
351		balustrade on ground floor. Any other option of boxing
352		the ground floor will be cheaper but won't look very
353		good. Let's put it in for tender and then decide.
354	Client	Ok, but the best option is the cost effective one.

Event 4 (Project 1 – Email following Meeting 1, 10-19)

10	Client	I thought that we were having (fire) glass only at the
11		basement level with the ground floor to be boxed in
12		rather than replaced with glazing to save costs?
13	Architect	We mentioned that at some point but I really think
14		putting a wall up will completely destroy the space. We
15		need to open up and make the descent to the
16		basement inviting.
17	Client	I am concerned that we are adding further to the cost
18		but I guess we will have to see what the tender prices
19		come out at and value engineer at that stage.

The events above (Events 3 and 4), suggest that the architect operated at multiple levels of analysis bringing richness in the process of establishing the uncertainty. This suggests that establishing uncertainty was not an isolated process of simply comparing the knowledge required with the knowledge available. Rather, it was a co-construction process where various concerns, which were based on practitioners' expertise and understandings of the situation, were expressed; and therefore, addressed.

Event 5 below is particularly interesting because it reveals that uncertainty did not always refer to a lack of knowledge, but it could also be a matter of knowledge representation and/or persuasion. Besides, similar to the previously presented events, this event once again demonstrates that the way in which the uncertainty was established, determined the way it was addressed.

Event 5 (Project 1 – Meeting 1, 50-63)

50	Architect	We need to get rid of the fixed island as the current
51		clearance is not enough. Also, the bench is reducing
52		the versatility of the space.
53	Client	Is it too much to have a table and a sofa?
54	Architect	A solution for you to have a flexible space which has
55		an island, table and sofa would be to re-create the
56		linear space into a U-shaped kitchen, with the table
57		acting as an island. This will enable the rest of the
58		space to allow for a sofa and more seating

59		arrangements [drawing to show ideas].
60	Client	To be further convinced I would like some 3D
61		drawings, as I cannot visualise the space as proposed
62		at the moment. Also good to have these options in 3D.
63	Architect	Ok sure. I have to persuade you; this is the best option.

Overall, these events suggest that, in practice, ‘uncertainty’ was not a generic issue about a general lack of knowledge about the developing design. Rather, it was enacted in practice in uniquely situated ways based on the unfolding interactions that were driven by the varying expertise, understandings, and so, concerns of, the interacting parties. As a result, establishing the unique nature and extent of the uncertainty provided the frame in which innovation and adaptation could be accomplished. Next, the focus of the analysis will shift to the details of the interactions through which such innovation and adaptation were enacted.

The practice of innovating and adapting under uncertainty

As implied by the findings presented in the previous section, once the uncertainty was established for an issue in hand, the way in which it was established had already created a frame in which innovation and adaptation would/could be achieved. This was because establishing the uncertainty involved establishing the concerns around a decision. Hence, according to this explanation, adaptation meant adapting to various concerns that were deemed important by the design team, and innovation meant finding the solution that adequately addressed such concerns.

The events presented in the previous section have already provided some examples of this dependency between the practical actions for adaptation and innovation, and the way in which uncertainty was established. For example, when the client raised his concerns about the cost in Events 2, 3, and 4, the decision was to wait until the tender to see the quotations. In these instances, pausing the decisions around the heating system and the type of the balustrade were the enactments of ‘adaptation’ in practice. Similarly, pausing the decision to address the cost uncertainty was what enabled the solution’s relevance for the client’s needs, which was key to enabling an ‘innovative’ solution.

However, the findings of the research suggested that the dependency between ‘establishing uncertainty’ and ‘adapting and innovating under uncertainty’ was not linear but cyclical. This meant that establishing uncertainty framed the potential ways forward for adapting and innovating, but the act of establishing uncertainty itself relied upon the previous decisions relating to adaptation and innovation because such decisions shaped practitioners understandings and concerns around a particular issue. Hence, the meanings of ‘uncertainty’ and ‘adaptation and innovation’ co-evolved in practice. This aspect of design practices is exposed in the event below through the references made to the shared past of the interacting parties (i.e. an architect, a basement construction specialist, and a representative of the main contractor). Here, the references made to the past decisions helped developing an actual understanding of the uncertainty around the issue in hand. Then, this updated understanding of the uncertainty paved the way forward for an adaptive and innovative decision that progressed the design acknowledging the lessons learnt from the past discussions and decisions.

Event 6 (Project 2 – Meeting 1, 110-143)

110	Contractor	Need to know the diameter of pipes to make a good
111		judgment call about the required depth and length the
112		excavation requires.
113	Architect	If we don’t know the dimensions required we cannot
114		redesign need your expertise [points at basement
115		specialist (BS)].
116	BS	Perhaps we could have a diverter.
117	Architect	We had tried that previously, but it didn’t work.
118	BS	So then we could drop the ceiling height to
119		accommodate the length of the pipe.
120	Architect	Can save cost doing this option. However, we need to
121		consider the depth issue with reaching the water level.
122	BS	In that case you can consider using piles instead, even
123		though the costs may increase.
124	Contractor	How about underpinning instead, it can be considered

125 as temporary works which is cheaper?
126 BS The problem with underpinning is that you have to keep
127 it dry, so if we don't know the level of the water it might
128 not work as a viable option.
129 Architect Also, underpinning will require further drawings, so it
130 will increase both the costs and the completion date.
131 As an alternative however, how about if we raised
132 everything by 300mm? There is room for the head
133 height in the basement to be reduced.
134 BS You could drop the level of the main instead so the
135 level of the height will not be affected.
136 Contractor Only a water company can tell you the level of the
137 water. If it's low then we could just drop the main.
138 Architect The ideal scenario would be to get rid of the piles and
139 move the mains downwards.
140 BS Yes, that is the most cost effective option. If the pipe
141 can be moved, great, if not we need to do the piling
142 option. We need to find out where the water is and then
143 we can meet again to make that decision.

The event above illustrates that, in practice, innovating and adapting were not punctual acts. Rather they were about continuously advancing the understanding of the uncertainty based on various perspectives that had a stake on that issue and taking a series of decisions based on this developing understanding.

However, the situated and path-dependent understanding of 'uncertainty', also meant that, with time, the previously made decisions reduced the number of alternative ways forward by knitting different parts of the design increasingly tighter. In such cases, adaptation and innovation were still derived by the interactions of practitioners with different expertise but in more constrained ways as shown in the following two events.

Event 7 (Project 3 – Meeting 1, 10-21)

10 Engineer To have sufficient circulation ventilation you will require
11 a new unit and pipe to make it work.
12 Architect How much will this cost?
13 Engineer (sum) pounds.
14 Architect That is quite a lot. How about we push the floor above
15 slightly back to allow for trickle ventilation?
16 Engineer No, that won't be a cheaper solution as the wires have
17 already been built into the floor.
18 Contractor How about we ensure that the windows on this floor can
19 be opened?
20 Engineer I am afraid that the one I am suggesting is the cheapest
21 option. No other alternative I am afraid.

Event 8 (Project 3 – Meeting 1, 50-66)

50 Architect Can we use this depth for the electrics meter and the
51 AC?
52 Contractor Yes but the depth of the AC is more, so the space will
53 seem disproportional with both in the same room.
54 Architect Ok. How about the distance between gas and
55 electricity?
56 Engineer Not enough room, you need to leave a substantial gap
57 in the utility room.
58 Contractor How about placing it here, on this side of the wall?
59 Engineer Yes, we could slightly adjust the timbers so that it
60 would fit.
61 Architect Could we move the timbers even more so that the AC
62 can fit in here as well?

63	Contractor	That is possible. How about the AV racks? We need
64		space for those as well.
65	Engineer	We could put the AV racks in the media room
66		horizontally instead of vertically, so they don't take up space.

Most of the times when issues were discovered with the previous decisions, these could be addressed within the constraints of the previously taken decisions as shown in Events 7 and 8. However, sometimes rewinding of the decisions was required to return to a previous state of uncertainty which would then release a wider set of options for adaptation and innovation as shown in the event below.

Event 9 (Project 3 – Meeting 2, 50-58)

50	Client	I need more storage in the utility space.
51	Contractor	We had a discussion two weeks ago about how much
52		wiring is required to go here and how this is the
53		optimum solution in terms of electrics and AC. That will
54		mean that you won't get as much storage as you
55		initially wanted.
56	Client	Storage is premium, anything you can do will be
57		appreciated.
58		[Contractor and architect look perplexed]

Overall, the findings suggest that the capability of design to adapt and innovate was a result of simultaneously working with different understandings and extents of uncertainty around different issues through multiple ongoing interactions between multiple stakeholders. In this context, adaptation and innovation were not punctual acts but ongoing accomplishments which relied on progressing the stakeholders' understandings of 'uncertainty'. Although this enabled the much-needed flexibility and experimental learning, this way of progressing also sometimes required rewinding of the decisions due to the changing concerns of stakeholders and/or discovery of previously unforeseen or miscommunicated issues.

Discussion

In management literature, 'design thinking' predominantly refers to methodologies that consist of a set of principles and tools that lever creative problem-solving for ill-defined challenges. A closer look at the practice of 'doing designing' reveals how managerial activities were accomplished as part and parcel of everyday design interactions, thus enabling insights into what 'managing as designing' involves beyond the use of design perspective merely as a problem-solving methodology for certain complex issues. This section will start by discussing the implications of the findings on the definition and practice of 'managing as designing'. The first part of the discussion builds upon the first theme presented in the findings section (i.e. 'establishing uncertainty in practice') and reflects on the definition of 'management' within the context of 'managing as designing'. Building upon the second theme presented in the findings section (i.e. 'the practice of innovating and adapting'), the second part of the discussion reflects on the key practical challenge of innovating and adapting while 'managing as designing'.

Managing as designing

Boland et al. (2008) claim that applications of a design perspective to management should consider design as a process rather than a noun. Adopting a practice-based view of 'doing designing', findings of this paper sheds some light on what this means. First of all, the findings of this research suggest that 'managing as designing' is not as much about maximizing exploration in all circumstances as implied by the majority of the previous studies on 'design thinking' for management. Rather, the findings suggest that, 'managing as designing' is first and foremost about the capability of establishing the uncertainty associated with an issue in order to come up with a decision-making process that suits the perceived nature and extent of the uncertainty. From Event 1, it is clear that some of the issues that were faced were perceived as straight-forward and did not require effortful exploration. Whereas in other events (e.g. Event 3, 6) the significant effort put into exploration of potential solutions was apparent, when there was an uncertainty which hampered decision-making. Therefore, it can be argued that application of design perspective to the management of an organization is essentially about establishing the environment and mechanisms that can filter and sort the issues depending

on the nature and extent of the uncertainty that is associated with them. By doing this, the observed design teams simultaneously worked at various levels of uncertainty, thus optimizing their use of time and effort, and only engaging in effortful negotiations when an uncertainty was noticed based on their professional and/or interactional expertise. This argument is in line with Kupp et al. (2017) who suggested that, in order to reach its full potential, design thinking in business must be more closely aligned with the realities and social dynamics of established businesses. Hence, in order to use design perspective as an organizational management approach, it is necessary to reflect upon the existing knowledge and interactional repertoires of the organization with the purpose of establishing the environment and mechanisms that can effectively notice, filter, and address issues based on their nature and extent of uncertainty.

The findings also emphasize that 'uncertainty' associated with issues was not something absolute; but rather uncertainty was established through the interactions of the practitioners who have a stake on that issue. Based on this, Event 5 demonstrated that uncertainty can be a matter of knowledge representation and/or persuasion among the interacting parties. Furthermore, Event 4 showed that experts with different backgrounds operated at multiple levels of analysis of uncertainty even if they did not explicitly bring these levels into their discussions with other practitioners. These findings highlight that 'managing as designing' should primarily be about enabling adequate means and processes of communication as opposed to setting abstract managerial goals and/or performance criteria based on long-term planning. Methodologies of 'design thinking' provide a sense of the variety of communication means and processes that can be used while establishing and addressing uncertainty. However, in line with the point made above, this paper suggests that organizations must develop their own communication means and processes based on their existing professional and interactional strengths and expertise. This implies that 'managing as designing' fundamentally requires a sound understanding of the multiple levels of analysis at which various organizational actors operate when judging uncertainty. Such an understanding would be the basis for the management to identify which existing interactional patterns are useful and needed for 'managing as designing', which ones can be abandoned, and what new patterns of interaction might be useful.

The key practical challenge of 'innovating and adapting'

The findings highlight the interplay between innovating and adapting while 'doing designing'. The events showed that adaptation and innovation were not punctual acts, but they were rather enacted through design interactions. This meant that they were not exclusive and separate from each other but rather they were implied by each other. When decisions are paused in Events 2, 3, and 4, this can be seen as an adaptation to the uncertain environment, but it can also be seen as the necessary course of action for enabling an innovative solution that consider the needs of the client. On the other hand, in Event 6, various design specialists negotiated the potential ways forward to fit various elements in a limited space and came up with an innovative solution. However, this discussion had a strong sense of 'adapting' to the existing design constraints that were due to the previously made design decisions. In both cases there were both adaptation and innovation, however, in the first instance a design decision was not made, and design exploration was left open, whereas in the second one a decision was made within the constraints of the previously made decisions. There is also some evidence in the findings that previously made decisions could be reversed occasionally when the benefit of doing such was judged to be higher than adapting to the previously made decisions. However, this meant rework and extra time, which could be frustrating for design practitioners, due to returning to a previous state of uncertainty.

Therefore, the key practical challenge of 'innovating and adapting' in design practices can be articulated as the judgement of whether adaptation to uncertainty or adaptation to constraints are required for various instances. As illustrated in Event 9, in such cases, various stakeholders may have different opinions regarding the course of action to follow due to their peculiar concerns. This does not only mean a challenge of knowledge representation and/or persuasion but also reveals that, while 'managing as designing', a higher-level prioritization of certain types of concerns can be useful to reconcile various individual concerns of different stakeholders. Nevertheless, such priorities must be set and articulated attentively in order to avoid the suppression of the richness of having various opinions. For example, in several of the presented events, it was apparent that lowering the cost was the top priority for the client, who was the project sponsor, and therefore, the most powerful actor in the presented settings. This higher-level prioritization helped reconciling various views, and so, had a strong influence on the ways in which practices unfolded. However, on the other hand, Event 4 explicitly showed that the architect had concerns about 'destroying the space' for the sake of

reducing the cost, which revealed the risk of suppressing the richness from various opinions through such higher-level priorities.

Conclusions

Over the last two decades 'design thinking' has attracted significant attention from the managerial world based on the promise that it provides methodologies to tackle complex, ill-defined business problems. The focus on principles and tools of 'design thinking' in management literature has recently started to attract criticism due to the instrumentalist view of design that it favors, which lacks an adequate consideration of the empirical details of the complex process of designing. As a response, this paper presented findings of a practice-based inquiry into the design meetings of three residential refurbishment projects in the UK. The analysis of rich empirical data on design interactions revealed insights into the practice of 'managing as designing' by exposing how uncertainty was experienced, judged and addressed as well as how innovation and adaptation were enacted, through everyday design interactions. The findings suggest that 'managing as designing' of an organization is essentially about establishing the environment and mechanisms that can filter and sort the issues depending on the nature and extent of the uncertainty that are associated with them. A fundamental requirement to enable this is to have the adequate means and processes of communication to support the interactions. However, the key practical challenge of 'managing as designing' is identified as the conflicting needs of addressing various concerns presented by multiple stakeholders and reconciling such concerns, while assuring that there is progress towards an adaptive and innovative solution.

Based on these arguments, it is concluded that management under a design perspective should be primarily and equally concerned about (i) facilitation of the interactions among stakeholders to support knowledge representation and negotiations, and (ii) leadership to reconcile varying opinions and concerns of various stakeholders. It is also concluded that more practice-based studies of 'doing designing' are required to further establish what 'managing as designing' involves in practice, and to develop strategies for the facilitation of, and leadership in, everyday organizational interactions from a design perspective.

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