DESIGN MEETINGS: TOWARDS AN UNDERSTANDING OF THE STAGES AND ACTIVITIES THAT INFLUENCE SUCCESS

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Abstract

A central part of the design process is collaboration, harnessing specialist expertise often in meetings. We understand relatively little about how meetings serve teams of designers and their work and this study uses soft systems methodology to attempt to create structures that describe and explain meetings. The results suggest extension of the boundary of interest and suggest a conceptual framework which reveals some under-addressed stages and activities which may help designers improve their meetings.

Keywords: process improvement, collaborative design, systematic approach, design tools

1. Introduction

Much design takes place collaboratively due to its complexity, its need for specialised expertise or tight timescales (Olsen et al., 1992). Collaboration requires opportunities to successfully share knowledge, trust each other, be open and coordinate behaviours, without which "teams have an increased likelihood of failing, even if they possess an extensive amount of task relevant knowledge" (LePine et al., 2008).

Meetings are one of the ways designers collaborate and their role in the design process is well established in enriching the design search space, evaluating and selecting alternatives, developing participants' commitment to the team's outcomes (Vivacqua et al., 2011) and engaging in reflective activities with stakeholders (Lopez et al., 2017).

From studies on all types of work meetings, estimates of working time spent in meetings range from 20% to 75% (Panko, 1992). Attendees say they are ineffective as much as half the time (Rogelberg et al., 2011) and around a third do not achieve their intended outcomes (Tobia and Becker, 1990). Researchers don't agree either the problem definition or the solution (Kauffeld and Willenbrock, 2012) and existing literature on all types of meetings is largely focused on meetings as stand-alone events rather than embedded in wider systems (O'Rourke and Duffy, 2012).

Whilst a small number of studies have been conducted specifically on design meetings yielding a number of insightful narratives, there is little integration with the larger body of meeting science literature. Across both bodies of literature, most studies zoom into the meeting event itself. Though the meetings literature comprehensively covers the variables which influence meeting satisfaction, they are largely deductive studies, for example the impact of using an agenda or late arrivals on attendee satisfaction. Less common are studies which zoom out, exploring meetings as situated in wider systems and helping to develop an abstracted theory. This is a problem because without a theory, it is

harder for disciplines like design to integrate what is known in meeting science into their own studies of collaborative activities like meetings - or to share knowledge back to meeting science. This study seeks to begin that process of zooming out from the design meeting event and asking new, more open questions in search of a unifying theory designed to scaffold future research into design meetings.

2. Literature review

Meetings are now studied in their own right as a phenomenon of interest rather than a container for other studies, such as teams or dialogue research (Allen et al., 2015).

Those studies focused specifically on design meetings are diverse in purpose, methodology and scope, from studies of design meeting language (Lloyd and Busby, 2006), collaboration in design meetings (Vivacqua et al., 2011), design meeting phases (Lopez et al., 2017), social and physical interactions in design meetings (van Dijk and van der Lugt, 2013) and sequences of design meetings (Gero et al., 2013). Most studies have limited or no crossover with the existing meeting science literature.

Those studies which concern all types of meetings can be characteristics into three main groups: ethnographic studies, studies of in-meeting discourse and more recently, two decades of correlational studies. Though Schwartzman's book "The Meeting", one of the earliest and most significant contributions to meeting science, called for broader, more holistic studies (1989) few subsequent studies have answered this call. On closer examination, over three quarters of studies specifically on meetings in the last three decades seek to quantify linear relationships between in-meeting variables. The dominant measures are self-report measures of satisfaction, which are relatively weak (Delice et al., 2019) and limit our understanding of the outcome of a meeting to participants' ratings.

There are few examples of qualitative studies and few researchers view meetings through multiple angles or using a zoomed out lens, the most comprehensive being a series longitudinal studies of sequential meetings (Duffy and O'Rourke, 2017). Meetings lend themselves well to direct observation but this is a relatively under-utilised method, perhaps perceived as an unaffordable luxury (Moreland et al., 2009). The application of observation in studies to date is primarily in service of discourse analysis (Murray, 2014; Angouri, 2012; Depperman et al., 2010) rather than to enrich descriptions of meetings in relation to the working world around them.

Few existing studies address the dynamic nature of the interlocking systems in which meetings are embedded (Feldman et al., 2016), a problem meetings science shares with social sciences more generally (Bhattacherjee, 2012). This has particular implications for design meetings which often require complex interactions and collaboration across multiple layers of an organisation (Lopez et al., 2017), making the case for shifting away from studies of meetings as context-less, discrete events and instead exploring meetings as part of dynamic systems.

Though there are some systems-led pictures, such as the MaSP framework which pictures meetings collectively and their role in the 'river of discourse' of an organisation (Duffy, 2016) and in design, Gero's multi-meeting study across the stages of design, there is just one example of an integrative framework which organises and visualises the role of meetings and connects them to the systems into which they are embedded. The Integrative Framework on Meetings and Strategy Process (Dittrich et al., 2011) considers meetings as having three core phases (initiation practices, conduct practices and termination practices) however its focus is the role of meetings in one system in particular - the system of strategy process. This framework provides a useful way to perceive and structure an integrative framework and, in part, inspired this study which focuses on creating a similar integrative framework for design meetings.

There is an opportunity to study design meetings more holistically in a way that might encompass the real world more completely. Using 'process theory' which invites us to think in terms of events and processes (Mohr, 1982) together with a holistic systems approach, this paper aims to move towards the type of account that seems to be missing, specifically a study of design meetings as embedded in a set of dynamic systems which might lead to a holistic, integrative picture of design meetings. To achieve this, Soft Systems Methodology (SSM) is adopted to provide methodological rigour and a set of organising principles for this more open-ended type of study (Churchman, 1971).

3. Methodology

Given the case for a broad, holistic enquiry of design meetings, a series of studies was designed to answer the following research questions:

- RQ1: What are the boundaries of interest when taking a more holistic, system-led approach and what are the inputs, transformations and outputs of meetings, using this new boundary?
- RQ2: What problems or patterns of interest emerge using this new system boundary?
- RQ3: How could these patterns fit together and be developed into a conceptual framework?
- RQ4: How useful is this conceptual framework for understanding and improving design meetings?

The study used SSM as an iterative, qualitative research process which offers a structured enquiry method to address the unstructured problem of meetings (Checkland, 1989; Warren et al., 2019). SSM was chosen as a way to study meetings holistically and systematically by applying a systems approach specifically designed for this type of human problem situation where the problem is ill-defined.

3.1. Data collection and analysis methods

In support of a more holistic study, data were collected via sequence of interviewing methods inspired by SSM. Two sets of study participants were recruited who identified as product, industrial, UX/UI, software or hardware designers or managers of design teams in these domains, where the projects under discussion had three or more collaborators. Group 1 comprised 20 participants, of which 12 considered themselves designers and the remaining eight were managers of design teams, who agreed to complete one or more of three types of qualitative interviews as part of a discovery phase and then to review and test the emerging conceptual framework. Group 2 comprised eight participants of which four considered themselves designers and four were managers of design teams. Group 2 participants did not take part in any discovery interviews but reviewed and tested the emerging conceptual framework.

To answer RQ1, three types of interviews were conducted with Group 1, designed to explore meetings from multiple angles using a zoomed out lens and to generate an overlapping dataset in order to reduce single-source bias (Salas et al., 2018).

Interview type 1 involved graphic elicitation (Crilly et al., 2006) in which participants were asked to choose a current design project and visualise its meetings on paper, adding layers of inputs, transformations, outputs, boundaries and then zooming out to describe and sketch related systems throughout 90 minutes of discussion and drawing. Interview type 2 was a 30-minute interview which used contextual enquiry to anchor data in real discrete experiences (Holtzblatt and Jones, 1993; Podsakoff and Organ, 1986) to address the difficulty people have describing constructs that are largely invisible or unconscious (Delice et al., 2019). Participants were asked to explain two recent meetings, one they considered 'good', the other 'bad', as an entry point to a real life story. Interview type 3 invited participants to discuss a screenshot or photograph of their diary for the last complete week in a 30-minute interview as a way to explore the relationship between meetings and how individuals organise their time during their working week using a sample of meetings unbiased by recall.

Data from all three interviews were coded and overlayed on a systems diagram to create an early rich picture for testing with study participants. Interview type 1 pictures were analysed to explore how participants described the five dimensions of interest: inputs, transformations, outputs, boundaries and related systems. Interview types 2 and 3 were divided into comments which related to the same five dimensions to explore emerging categories and patterns. This stage was intended to help develop a grounded theory, surfacing the themes that interviewees believed to be important rather than framing the exploration using the researcher's own assumptions (Glaser and Strauss, 1967). Finally, an additional categorisation was added to comments relating to the components of attitude: affect, behaviour and cognitions (Ajken and Fishbein, 1977) to create a large visual map of the categories emerging across the whole system. All comments were coded according to their viewpoint (manager or designer; meeting organiser or meeting attendee) and an approximate gauge of the stage of the design process (early stage, mid stage, late stage, purely executive or cross team

information sharing). From this, a rich picture was developed as a first attempt to explore the relationships and patterns across the system.

This rich picture was tested and iterated in two ways. Firstly, it was shared back in six further interviews with members of Group 1, using the picture to explore, improve and recheck the meaning derived from the data. Secondly, three design meetings were observed directly, the researcher capturing reflections throughout about what appeared to confirm or disconfirm elements of the picture.

From the iterated and member-verified picture, the most interesting problems were collated and translated into an emerging series of stages and activities, representing key areas of focus in order to answer RQ3. Where possible, differences in problem patterns by design meeting type were noted.

Finally, to answer RQ4, this series of stages and activities were expressed in a simple conceptual framework and shared with eight participants from Group 2 (same role types as Group 1 but fresh to the study and unaware of the content of the discovery stage) in order to test its acceptability and usefulness non-members of the first study (Bloor, 1978). Each participant received a briefing on the conceptual framework and was allocated up to eight weeks to use what they had learnt to make modifications to their design meetings. Each reported back on their experiences in a 30-minute interview.

3.2. Limitations of the methods

The primary researcher is a meeting design practitioner and also an organiser and attendee of work meetings which both enhances and limits the data collected and its analysis. The methodology was designed to minimise what is unhelpful about the researcher's prior experiences and to acknowledge the bias that remains. The interviewer's practitioner experience was used enhance the richness of the data collected as "it is in the interaction between the researcher and researched that the knowledge is created" (Mehra, 2002) and also to add maturity to its interpretation. The use multiple interview types and prompts help to avoid recall and recency bias and also the limitations of self perception, together with comparison with observational data to highlight gaps in self-knowledge. The rich picture was presented as a sketch, imitating a draft, to minimise acquiescence bias. The results are also limited based on what was taken account of or overlooked at each of the interview and analysis stages so this account represents one possible story and other researchers may have found different or additional stories.

4. Findings

In this section, the key findings of the study are presented as responses to the four research questions.

4.1. RQ1: Exploring systems, boundaries, inputs, transformations and outputs

Two new possible boundaries can be observed together with a high level value exchange in response when evaluating the three types of interview in service of the first research question: "In a holistic study, what do the related systems and boundaries look like and what are the inputs, transformations and outputs?"

In over four fifths of previous studies on all meetings, the system boundary was limited to the meeting itself, specifically the start and end time. Analysis of interviewee commentary from this study on design meetings suggests that at least half of those in design consider relevant and important to the meeting falls outside this boundary and makes the case for resetting the boundary, not just once but twice. When specifically asked to draw a boundary, most participants in interview type 1 drew one which is not time-bound but instead related to the wider collaborative activity involved in initiating, designing, delivering and capturing the value of a meeting (boundary 2), as shown in Figure 1. A further boundary stretches around the related systems they describe (boundary 3), also in Figure 1. Boundary 3 incorporates the systems which participants' comments and drawings indicate are related and in which meetings are embedded, specifically the organisation, the project, the individual participants and the team system in which the meeting event itself is situated. Comments related to early stage design meetings draw and describe wider boundaries and refer to more related systems than those later in the design stage. Comments by meeting organisers are also more likely to refer to a wider set of related systems than those made by those attending the same meetings.
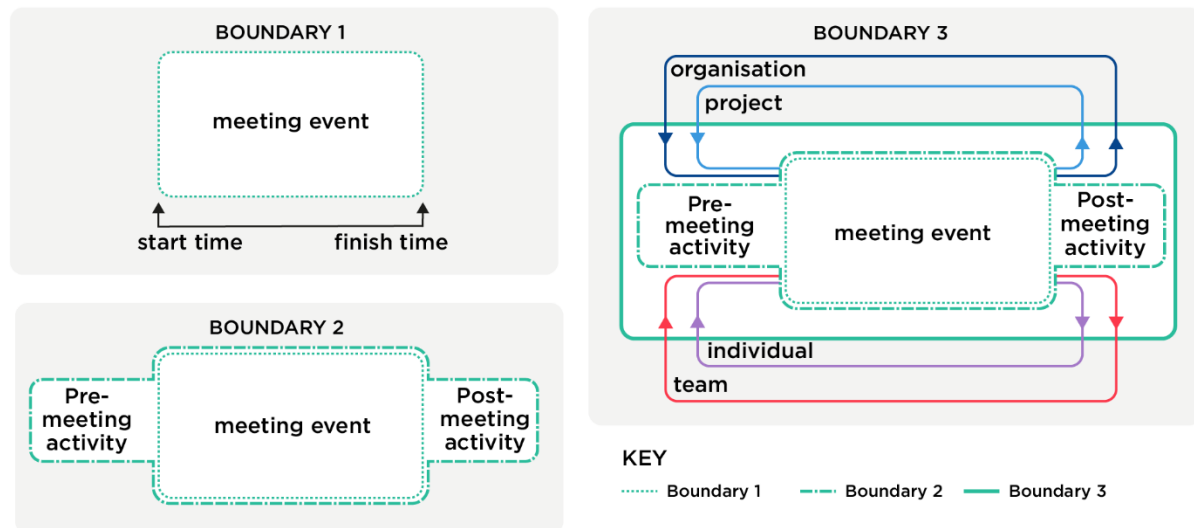
Figure 1. Redrawing the boundaries of the systems of interest

The data in this study support the idea that a design meeting is a form of exchange of time and effort for outcomes. Self-perception is one lens on the nature of this exchange and that which has been most often used as a proxy for meeting success. For example, Briggs, De Vreede and Reinig's Perceived Net Goal Attainment (Briggs et al., 2002) measures a meeting by asking attendees to rate how worthwhile a use of their time and effort they felt a meeting was. Analysing the nature of this exchange from interview data builds on this self-report, suggesting that meeting success can be attributed to attainment of certain positive outcomes offset against to the cost of their attainment in time and effort and any negative outcomes. Descriptions of this value exchange often include a striking degree of affect, for example attendees who perceive their time investment was not used to create valuable outputs elicited emotive language, often with a value judgment such as "I felt so angry, like she was stealing time from me" (P8.10).

4.2. RQ2: Pinpointing problems and patterns in design meetings

From interview data and the iterated rich picture, four pronounced problem types emerge in the design meetings studied, in response to the second research question. They were probed and refined in member validation interviews and the resulting four problems are described below.

The first problem concerns what happens before the meeting. Numerous rich descriptions of time-intensive, ineffective design meeting processes leading to insufficient positive outcomes point to the under-design of meetings experienced by participants. Most meeting hosts recognise this lack of design but perceive they do not have time for this additional task. Across all types of design meeting, there is a sense among meeting hosts that attendees should know what stage the design project is at and therefore what is expected of them. Meetings described by their attendees confirm this is often not the case.

When a design meeting is conceived, tangible elements are recorded (specifically, the time, date, name of meeting and invitees) but less tangible elements often remain known only to the meeting organiser: its purpose, structure, content and the contributions attendees are expected to make. Many participants report insufficient understanding of the purpose of meetings to which they are invited, the role they are expected to play and the intended outcomes of a meeting. This appears to be particularly significant when the meeting is an early stage design meeting. Regular executive meetings are also reported to lack purpose and a clear set of outcomes, and to be both over-structured and 'routinised' at the same time.

Designers interviewed expressed frustration about meetings being scheduled directly into their diary without understanding why they are invited and what is expected of them. Interview type 3 (exploring design meetings in relation to workload and work day) data show this affect can arise from the cost of that meeting time to achieving individual goals they are already committed to in that time period. Hosts of design meetings express frustration that designers arrive unprepared and sometimes unwilling to engage, particularly in executive or cross team information sharing tasks, and this is common to meetings at all stages in the design process.

Negative meeting experiences share an absence of effective 'contracting' between the host and the invitees, for example agreeing roles, negotiating preparation or deciding what are acceptable behaviours during the meeting. Where an element of participation in and iteration of a shared concept for the meeting was in evidence, interviewees reported they felt more commitment and were more willing to prepare and contribute.

The second problem relates to the unrecognised forming of a temporary group. A rich cluster of interviewee comments seem to point to a transition phase between the activity before the design meeting from the meeting itself. During this liminal phase, data showed there is a process of 'teaming' in which a group becomes (or doesn't become) an aligned and committed team for the duration of the meeting. Lack of successful 'forming' can be observed as limiting factor, slowing or halting progress both during the meeting and limiting its impact afterwards. Notable is the degree of affect that people feel when the meeting fails to make this transition successfully and comments indicate that this sometimes transgresses meeting attendees' value system, "I felt sidelined and no one should feel that" (P1.1).

The third problem concerned a call from almost every interviewee for more order in design meetings in the form of clearer and stronger processes, deployed with a higher degree of control. This expression is particularly marked concerning regular scheduled meetings, such as executive or cross team information sharing. Some interviewees, within the same interview, also expressed concern about over-constraining design meetings, especially those at early stages of the design process. Meeting attendees and hosts alike typically found it difficult to describe what more order and control would look like in practice beyond better use of an agenda and many meeting hosts expressed a reluctance to making even small improvements in structure to their own meetings, a reticence which they found hard to account for.

The fourth problem area was around capturing and embedding the value of meetings effectively. When asked to describe the relationships between design meeting outputs and the wider system, most interviewees agreed that outputs could be fuzzy ("It wasn't clear if we had actually made a decision or not during the meeting" - P7.11) and fail to tangibly capture the transformations which had taken place, such that they could be completed and used. Both interviews and observation highlighted the absence of dedicated time or processes to embed meeting outcomes into the systems they are designed to benefit ("The way we manage out meetings is fundamentally broken because we email out actions" - P1.3).

4.3. RQ3: Developing a conceptual framework

Accepting that there are many possible ways to translate the findings described above into a theoretical framework, here is one way to capture a more holistic picture of design meetings in response to the the third research question: How could these patterns fit together and be developed into a conceptual framework? By translating the problem areas into stages and breaking these stages down into reported activities in service, a conceptual framework emerges which intends to group and make accessible the new understanding this study has created, as shown in Figure 2. The conceptual framework is influenced by a systems approach but does not strictly follow any single modelling protocol.
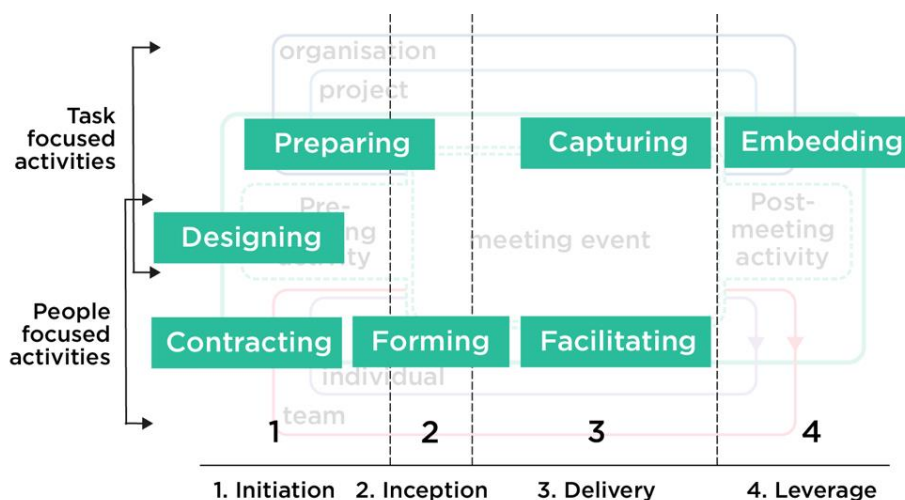

Figure 2. Conceptual framework: Stages and activities of a design meeting

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Figure 2 shows that the four stages of a design meeting revealed by a 'zoomed out' study extending to boundary 3 are Initiation (concept development of the meeting), Inception (transition into the meeting micro-environment), Delivery (structuring and facilitating the meeting) and Leverage (capturing and translating value from the meeting back into the wider systems). The activities spanning across these stages are broadly divided into two groups: those primarily focused on task outcomes (Preparing, Capturing and Embedding) and those primarily focused on human outcomes (Contracting, Forming and Facilitating). The activity of Designing focuses on both task and people outcomes.

4.4. RQ4: Exploring the value of this framework for design meetings

In order to address the fourth research question, "How useful is this conceptual framework for understanding and improving design meetings?" the conceptual framework in Figure 2 was shared with eight participants from Group 2 who had no familiarity with the model or study. After an online briefing and eight weeks of testing its ability to help explain or improve design meetings, participants revealed some early insights in the follow up interviews, the most commonly shared of which are shared below.

All participants responded positively to the conceptual framework, describing it with words such as 'useful', 'insightful', 'very helpful' and 'very interesting' and attributing its value to placing meetings within the work they are intended to support. However, participants' recall of its content was mixed with two of the eight participants unable to describe its basic detail, even when prompted.

The concept of a value exchange was highlighted by half the participants as one of the most helpful principles highlighted by the model. Reasons cited include better empathy for some design meeting attendees' unwillingness to prepare or contribute and insight into how this might be overcome.

Contracting - an activity flagged in the discovery interviews of RQ1 as poorly understood and executed - received the most airtime during the follow up interviews of RQ4. Over two thirds of all changes to design meetings made by Group 2 participants related to contracting and it was cited by all but one participant as particularly valuable when they were first briefed on the model. Participant comments indicate that contracting is an activity that, once described, is obvious and helpful, but which previously had no specific name nor any allocated time in a design meeting planning process. The last two activities, capturing and embedding, were the least mentioned in follow up interviews. An obvious question is whether the activities shared earlier in the briefing were more readily understood and remembered.

5. Discussion

Studying meetings using a holistic approach and considering a meeting specifically in the light of the systems in which its embedded rather than as a stand-alone entity reveals four possible stages and eight activities which together open up new ways of addressing the effectiveness of meetings.

Some of what we already know from the literature pertaining to all meetings (not just design meetings) is validated. For example Briggs, De Vreede and Reinig's measure of meeting success based on an individual's reported perceived net goal attainment (Briggs et al., 2002) is supported by the way in which interviewees talk explicitly and with little prompting about the value of the time and energy they have invested compared with the outcomes they were expecting. This study shines a light on the many factors that contribute to this mental calculation made by design meeting attendees, both those elements they can easily articulate like the quantity of time in minutes and hours or feelings of clarity they experience afterwards and those which they understand only partially, for example the commitment to a project's purpose a good meeting can create which extends long after the meeting. Furthermore, interviewees reveal other key factors such as the role contracting can play in perceived and actual goal attainment.

The findings in this paper challenge those studies which compare the influence of individual variables on meeting attendees' self reporting of perceived success in three ways. Firstly, this study of design meetings brings new variables into the frame through a more open-ended research methodology which encouraged participants to consider meetings through a wider perspective rather than asking them to respond to a pre-existing list. Secondly, by overlapping elicitation methodologies, from graphic elicitation to contextual enquiry, participants were invited to see and explore meetings from new angles

and to probe beyond a self reported rating of satisfaction with a meeting's process and outcome. Thirdly, by placing the system boundaries wider, a more complex relationship between individual perception and meeting outcomes emerges from which additional activities emerge as important. For example, the 'contracting' before a meeting in which its timing, content and process are negotiated appears to be particularly important for design meetings. Recognising and handling interconnectivity is a pre-requisite for determining whether a system intervention will 'work' or not (Churchman, 1979; Ulrich, 1983) and the response to this conceptual framework indicates that visibility of those interconnectivities is helpful.

The results of this study indicate that though most research papers to date have considered a meeting only as the time spent together in the room, that in fact a meeting event begins long before and extends some way after this hard boundary. A meeting is not a discrete, timebound module but instead is a collaborative event which is embedded into other dynamic systems in ways that are difficult to unpick. For this reason, the word 'meeting' limits our conception of the processes at work and new language is needed to distinguish the fuzzy-edged collaborative activity from the tangible timebound word 'meeting'.

Drawing in further insights about the way knowledge works is changing helps us further reposition meetings beyond simple, hard boundaries. Western organisations are at least 25 years into "shifting from individual jobs in functionalized structures to teams embedded in more complex workflow systems" (Kozlowski and Ilgen, 2006) and emerging from this changing state of work is 'collaborative overload' in which the time knowledge workers like designers spend in collaborative activities has increased by 50%. This means designers not just their managers, may spend up to 80% of their working time in meetings (Cross et al., 2016). This study helps highlight the demand that increased collaboration places on time available for designing, contracting and preparing for meetings. Without addressing this, meetings are unlikely to improve however much design teams wish them to.

This paper summarises the results and implications of taking a novel methodology to understanding design meetings inspired by a systems approach and conceives a simple set of stages and activities that might help the design community better understand their meetings. Though the findings of this study help to move forward the conversation from a systems perspective, they do not fully address the dynamic nature of the interlocking systems around design meetings throughout the design process which would be a useful future study to establish more immediately useful findings.

5.1. Conclusion

This exploration of a new type of study of meetings and the organisation into emerging structures may help the design community better understand the hidden influences in their meetings and focus their attention in a more systematic way. Seeing meetings as embedded in a wider set of dynamic systems and identifying key stages and activities that appear to be at work goes some way to explaining why previous variance-based studies of meetings have not yet entirely solved the problem of meetings.

There are three tentative implications of this study for the design community with an interest in meetings. Firstly, decomposing design meetings into key stages and activities provides a shared conceptual framework against which more granular testing be conducted, building a more cohesive body of knowledge about design meetings. Secondly, this study suggests that contracting is the activity where designers perceive there to be most opportunities to improve their meetings. Finally, viewing meetings as part of a wider system of achieving design work highlights a stage which had previously received little focus - that of the liminal transition between pre-meeting systems and the meeting itself.

A further implication is for the wider management community. Schön suggests that design-like behaviour is mirrors problem-solving for much professional action (Schön, 1983) and so findings validated in the design community may have helpful parallels for other professions, and vice versa.

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