Design Roulette: A Close Examination of Collaborative Decision-Making in Design from the Perspective of Framing

Janet McDonnell

j.mcdonnell@csm.arts.ac.uk

Central Saint Martins, University of the Arts London,
Granary Square, London N1C 4AA, UK.
Tel. +44 (0) 20 7514 7144

Abstract: This paper uses the concept of framing as a means of examining design process. It explores in detail interactions between a small design team as they collaborate to design a workshop which forms part of a larger project. Elements of framing practice, namely, moving, reflecting and reframing are used to draw attention the decision-making constructed as a failure to benefit from frame discipline. Set in the context of a substantial data set documenting a design project taking place within contemporary industrial design practice, analysis of this specific episode is used to discuss frame discipline as a characteristic of design expertise.

Keywords: collaborative design, decision making, design process, framing, design expertise.

Design research has an established history of using the concept of framing as a way of understanding some of what goes on at individual and team levels during a design process. Framing is one way of conceptualizing the necessity in design of imposing order on complex, uncertain, unstable situations, in order to develop an intervention to serve some purpose(s). Framing is a concept that acknowledges that designers select what they "will treat as the 'things' of the situation, [we] set the boundaries of [our] attention and [we] impose upon it a coherence which allows us to say what is wrong and in what directions the situation needs changing'' (Schön, 1983: p 40). Within a reflective practice paradigm for designing, situations are 'framed' and the things that will be attended to within that framing are

'named'. Decisions, usually termed design moves so as to embrace experiment and excursions that can be revoked, ensue within a particular framing. Reflection on moves within the discipline a frame imposes supports assessment of moves' values, leads to further moves within frame and can also lead to appraisal of the utility of a frame and thus to reframing.

Framing is a concept that serves at many different levels of granularity. However, giving an account of a design process by calling upon the concept of framing does not imply frame awareness on the part of those engaged in it. Frame awareness is advocated as a skill for serving society in dealing with intractable, controversial problems through enabling collaboration between parties whose world views are incompatible (Schön & Rein, 1994); and procedures in which framing is explicitly instigated have been advocated as a means to innovate (Dorst, 2015). The better understanding of design processes has also been served by looking at framing at meso- and micro-levels. Studies that use the notion of framing as an instrument for understanding what is happening in team-work show that successful establishment of shared frames can effect positively design progress and the quality of outcomes (e.g. Valkenburg, 2000). This is hardly surprising at one level because shared perspectives (framing) on what the task is, and how to proceed effectively with it, are likely to serve collaborators better than not sharing a common conception of the situation to be addressed. However, we also know that agreement can lead everyone happily down the wrong track, so a shared perspective itself is insufficient for effective outcomes. Positive appraisal can be associated with lack of critical inspection of assumptions, whereas negative appraisal invites justifications which are subject to scrutiny (Dong, Kliensmann & Valkenburg, 2009).

Whist using the concept of frames to inspect a design process may have explanatory value, the identification of framing phenomena are not, of themselves, indicators of the 'health' of a design process. This is rarely acknowledged. Not all frames are good frames. The value of a certain framing is established post-hoc. 'Good' framing supports effective progression with designing; it includes frames that are discarded having invoked moves and reflection that increase understanding of what is required and what is possible. In an era when the adoption of certain characterizations of 'design thinking' is being advocated as a readily acquirable life

skill (Brown, 2009; Stanford University, 2016), it is important for design research to contribute to better clarification of what goes on during designing, and what particular skills experienced designers draw upon; and to what extent these skills rest on the mobilization of domain knowledge and varieties of expertise. This article presents an interpretation of a single (video-recorded and transcribed) design meeting based on imposing the notion of framing on the interactions between the designer participants to draw attention to some aspects of framing practice.

1. Data and approach to interpretation

The recording of the meeting forms part of an extensive dataset which tracked the day to day development of a project to deliver a design concept within a large international manufacturing company (Christensen, Ball, & Halskov, 2017). The project's aim was to develop concepts for a product range specifically targeting emerging markets in China. The brief was to deliver a package comprising products, sales channels, and marketing, that would increase brand penetration in China. Video recordings and transcripts from meetings to design two co-creation workshops form part of the dataset. The co-creation workshops were expected to contribute to the project by engaging 'lead users' in activities to generate material for use by a team from the company's user involvement department and *their* internal clients, the company's special products unit, in delivering the concept package. It was the user involvement department team that designed the two co-creation workshops.

This paper analyses one meeting, identified as meeting v5 (duration 110 minutes), which is concerned with the design of the second of the two co-creation workshops (CC2). A preceding workshop (CC1) has been largely designed by the time of meeting v5 and some details of this second workshop, CC2, have already been discussed in outline. The interpretation presented below makes use of sequentially numbered turns-at-talk in the dataset transcript preceded by a speaker identifier (e.g. [A:990]); direct quotations from the transcript are italicized. The term 'participant' refers to someone present at the meeting; the term 'respondent' refers to someone taking part in the co-creation workshop being designed.

The approach to the research comprised two distinct phases. First, survey and selection of candidate material of potential interest from the dataset as a whole. (This comprised video

recordings of meetings, transcripts, and documentation of various forms tracing the development of the project in Europe and in China over the course of three months during 2015-16.) Second, detailed examination of the selected data, meeting v5, by moving attention between the transcribed data and successive constructed interpretations of it. In the first phase all of the project data were viewed, summarized, and assessed for its potential for a study focusing on how designers shape, or fail to shape, their task by various means which are apparent in their verbal interaction.

1.1 Survey and selection

The surveying of the dataset was conducted from a standpoint which included the following interests: prior research on a number of phenomena including accounts of *frame conflict* (Schön & Rein, 1994) and its consequences for design collaboration (Stumpf & McDonnell, 2002; Valkenburg & Dorst, 1998); the creative potential of (self-) *imposed design constraints* (McDonnell, 2011; Biskjaer & Halskov, 2014); *constraint balancing* (generators vs. obstacles) (Onarheim & Biskjaer, in press)); and expert designers' capacity to use incommensurate requirements to generate novel designs through *re-framing* (Dorst, 2015). This broad range of sensitivities served to focus attention initially but did not act as a simple filter on the dataset. There was interplay between successive readings of the data, the set of interests, and the lenses these afforded. Several potential lines of enquiry were hypothesized and discarded as familiarity with the data intensified. The process of survey and selection resulted in the identification of a sub-set of material for close inspection and a refinement of the constructs with which to pursue interpretation; the outcome was the decision to focus on constructing an account of meeting v5. In this particular meeting the team attempt to shape the design of the workshop CC2. They set out with a variety of objectives to satisfy and ambitions to incorporate. Both evolve as they discuss what to do. They work with constraints, some of these are of their own making, juggling, discarding and attempting to accommodate them. However, the team make very little progress. Set in the context of the dataset as a whole we are able to see that on the one hand the team is successful in delivering the project overall whilst on the other hand this meeting contributes little to the form that the CC2 workshop eventually assumes. The detailed interpretation of the meeting attempted here sets out to inspect and account for the lack of progress with the design during this one particular meeting.

1.2 Detailed interpretation

Two of the resulting interpretations are included here. Section 2 is a descriptive, chronological account that sets up the interpretation in Section 3 which makes use of prior notions about designers' uses of framing. Instruments for close examination of the data were not determined a priori. The interpretation in Section 3 uses some content analysis: counting turns where certain terms are mentioned and comparing the number of occurrences across participants. As the numbers of turns involved are small (n<100) it has been possible to inspect the conversational context in which each instance appears. Interpretation in Section 3 relies on this. A comparison of the transcript with the video recording of the meeting shows that a finer grained transcript would include further turns at talk if turns containing para-linguistics (e.g. 'uhuh') were transcribed. Therefore, turn counts are used directly so that measures are not compromised by the omission of paralinguistic turns. Multiple references to a term within a turn at talk are counted as a single turn reference. Turns at talk are relatively short as the meeting does not have any monological passages. In building a plausible account, descriptions appeal to evidence acceptable from the perspective of the tradition of conversation analysis (ten Have, 2007) in which the meanings of turns at talk is constituted by their practical effects among interlocutors; this relies on inspection of the sequences of turns at talk. Extracts from the transcript of meeting v5 are included in Section 3 to support the interpretation presented.

2. Interpretation: descriptive chronological summary

The participants, a team from the 'User Involvement Department' of the company, are assembled in a room at their work location to design the second of two co-creation workshops, that will be held in China with a small group (n=9) of 'respondents' who are Chinese citizens representing a specific demographic. A first workshop, CC1, has already been designed by the team (leader Ewan, Abby and Kenny) and shared with consultants engaged for their expertise in Asian markets. These consultants will facilitate CC1 and CC2. Ewan, Abby and Kenny know each other well and have worked together frequently in the past. A researcher, David, is also present and contributes occasionally.

2.1 First half hour

Post-it notes from previous sessions are arrayed in the room. The meeting starts with team members looking at these, Kenny refers to there being some '*start things*' [K:007]. The start things are that each group (respondents who have worked in two groups during CC1) will have its own '*little company*' [K:013]; and the conceit for CC2 is that respondents will be challenged [E:023] to express ideas for a product (where to sell, price, its story) [K:015]. The task for the team is to design how this will happen. Within the first five minutes it becomes apparent that an additional requirement is to assimilate two new respondents joining CC2 but not present at CC1 [A:047]. Talk over how to make use of the newcomers and integrate them surfaces problems with what actually will be the starting point for CC2 – what constitutes the '*little company*' on the post-it notes.

Just under 10 minutes in Abby [A:085] points this out, '*… we're ending here with the 'now imagine you're a CEO in a company wanting to invest in these themes' so now I'm thinking we haven't made the companies yet, so they can't present a company …*'. The next 20 minutes are spent trying to address several incommensurate requirements including how to integrate the newcomers; maximize the benefits of the newcomers' inputs; establish focused proposals variously described as a company, theme, product; and involve respondents (old and new) in a process to achieve focus. We are 30 minutes in, there is no breakthrough, part of what was previously decided about CC1 is now in doubt.

There is evidence that the team are aware that there is little progress. Here are two examples: Abby [A:164], referring to CC1 says, '*but we don't have any more time* (in it) *that's the problem*', followed by Ewan [E:165] saying, '*no no so I - no I'm just saying something needs to go …*'. There ensues consideration of redesigning some of CC1 i.e. back-tracking on the '*start things*' with which the meeting opened. Ewan [E:175] says, '*… maybe I'm repeating myself I'm coming back to is it possible that they come here and we spend I don't know half an hour forty minutes on them becoming a company …*'. However, this proposal creates adverse conditions for dealing with some other requirements.

2.2 Second half hour

After the first half hour there is an eight minute break. Recording resumes with a change of focus: Ewan starts to document on the white board practicalities for the start of CC2, [E:283] '*welcome and split out'*. 'Split out' refers to the separation of the newcomers from the other respondents so that they can complete an ice-breaking exercise that the original respondents completed during CC1. Practicalities such as how introductions will be effected; how much time to spend on things including re-cap on CC1; seating arrangements; who will be in each of two groups; and so on, entail discussion. This is relatively easy ground and runs smoothly until Kenny [K:533] raises something they have apparently discussed at an earlier occasion i.e. whether to change respondents' group membership for CC2 from that established for CC1. This is dismissed by Ewan at this point but raising the matter reminds the team of the '*major issue'* [E:557] unresolved in the first half hour, namely, at what stage of 'company establishment' the workshop respondents will be at the start of CC2. The first hour concludes with documentation of the plan of activities for CC2 up to noon with '*pitch and investment'* [K:562] noted as the place-holder for this problematic. This label captures the group's shared, current thinking, albeit still to be resolved, about the particular workshop activities that must deliver the prioritised ideas that respondents will develop through co-creation activities. The naming serves to bind together what has been discussed so that the team can refer to it among themselves economically (a phenomenon identified by Dong, Davies and McInnes (2005) as 'linguistic technicalising'). This move also serves to encapsulate this unresolved part of the design so that it can be put aside whilst the team make progress with other aspects of their design task (a phenomenon identified by McDonnell (2012) as 'encapsulation').

2.3 Start of second hour

It rapidly becomes apparent that there is a conflict between how CC1 concludes - designed to leave respondents able to spend the week between CC1 and CC2 thinking about the collectively most popular ideas '*think about your investment, what is good ... what makes sense'* [E:564] - and the current plan to get respondents individually to pitch and then vote on their favourite ideas part way through CC2 [A:374]. Kenny articulates what they are all aware of '*we have a result from last time* (CC1), *but maybe we'll get a different result now'* [K:575]. The team grapple at length with how to accommodate their desire to have all respondents engaged with working on a focus they are personally enthused by, whilst at the same time having the respondent groups collaborating around a shared theme. In designing

activities for establishing focus, they want to build in opportunities to elicit participants'
individual accounts of personal preferences. This is information the team are to deliver to
their company internal clients [E:754, 756, 758]. Trying to design this outcome occupies the
team for more than half an hour in discussing the challenges of 'pitching' an idea one is not
invested in, and in elaborate tinkering with voting mechanisms.

Towards the end of this period, the team reconsider the boundary (of progress with focusing
the respondents' attention) between CC1 and CC2. About 25 minutes into the second hour,
Ewan [E:777] says, '*I think we should continue as we planned* (for CC1)' but five minutes
later Abby [A:820] is suggesting that more focus needs to be agreed during CC1 to ease the
pressure on CC2. Ewan raises a series of concerns about this ranging from re-iterating that it
is demotivating to have to 'pitch' something one is not convinced about [E:838, 840, 875,
877], through to practical questions about whether there is time in CC1 to accommodate more
activities [E:870]. He doesn't seem convinced one way or the other himself, saying, '*still
don't feel hundred percent we have it in the bag ehm because I'm – in principle I'm very
much for them deciding already there* (at end of CC1)' [E:864]. There is a lot of side-
stepping issues. For example, there is lengthy discussion of different voting mechanisms,
rather than discussion of whether there should be voting at all. Similarly, discussion about
whether respondents will each contribute an idea for development is displaced by discussion
of the *form* such contributions might take e.g. as proposals for establishing a notional
'company' or a product line or as elaborations of a 'theme'; and on discussion of the *style* of
delivery of these contributions e.g. whether particpants should prepare to make sales pitches.

2.4 Final twenty minutes

About 100 minutes in, the major issues that the team started the meeting with remain
unresolved. Ewan, to test his belief that individuals will respond differently to a given
prompt, runs a quick '*simulation*' [E:904] by asking his colleagues what '*eco*' means to them.
This is an attempt to overcome an impasse. He concludes that, '*we learned that we have four
fairly different perspectives at least on it*' [E:929]. But Abby immediately questions the
validity of his experiment, '*but we didn't yeah and we didn't discuss it the whole* (topic for) *a
full day in advance*' (unlike the respondents during CC1) [A:930].

The team are tiring, Kenny's comment, '*I think it's getting late now*' [K:914], is repeated minutes later [K:949] after yet another round of inconclusive discussion about the questionable value of pitching something to which one is not committed [E:938]. Ewan agrees with Kenny's sentiment [E:950]. There is a sense that the team need new ideas, Kenny suggests they may need to keep things open [K:947], that there may be a '*third option*' [K:959], with Abby saying twice that maybe a different exercise is what is needed [A:954, 958]. There is a little more conversation about the boundary between CC1 and CC2 and finally, about what the period between CC1 and CC2 will deliver and whether the scope for respondents' thinking in this period will be sufficiently broad. But it seems, as the talk peters out, that the team are not clear, together or individually, about what respondents are to do between CC1 and CC2. David asks whether establishing a focus at the end of CC1 will make the scope of respondents thinking (too) narrow [D:1001, 1005]. Abby suggests that in the interim respondents might look up facts or solicit opinions from other sources [A:1006]. Ewan doesn't want this to happen and links ensuring this to keeping the 'pitching' of ideas as a CC2 activity. He wants the incubation period between CC1 and CC2 to be characterised as '*divergent*' [E:1014], but in almost the last contribution of the meeting, he reiterates what they started with almost two hours earlier, musing back on the dilemma of where to place focusing, '*but they (the respondents) know about their theme, and I think this was kind of our original (.)*' [E:1011].

2.5 Hindsight

After this meeting decisions are made which result in a change to the boundaries between CC1 and CC2. We know this from instructions for the workshop facilitators which are included as project documentation in the larger project dataset, as are recordings of the workshops themselves. These show that a voting activity takes places during CC1 to assist in narrowing down the scope of the topics/ideas that will be developed in CC2. No voting occurs in CC2. CC2 works with the most popular foci from CC1 and entails respondents working in two groups to generate ideas for a company (products, markets and branding) developed collectively then shared (pitched and justified) through presentations. Respondents' contributions throughout CC2 comprise the resource material for the user involvement team and their internal clients. Apart from agreement about the timing of some relatively unproblematic initial tasks which survive into the facilitators' instructions for CC2

it is difficult to see what contribution this particular meeting made directly to the final design of CC2.

3. Interpretation: the meeting as framing failures

Prior to the meeting the team have already decided that in CC2 respondents will work in two groups on tasks that will allow observers and facilitators to gather material which will form the basis of the 'concept package' they have been tasked to produce. To elicit what they need they are planning to use the conceit of having each respondent group form a 'company' which will embody, in product lines and marketing materials, a set of consumer values and ideas previously established (via activities involving discussion, clustering and voting in CC1). The clustered sets of ideas from which companies will be generated are also referred to as selected 'themes'. Here a close inspection of references to the two terms company/companies and theme/themes (singular and plural forms conflated below) is used to expose the team's failure to make progress during the meeting, viewed as failure to operationalise design framing. Sections 3.1 - 3.3 below focus on the key frame operations of moving, reflecting and reframing respectively. Extracts from the team's conversation during the meeting are included to support the account that emerges from examining the data from this perspective

3.1 Frame discipline: moves

The term 'company' appears in 42 turns-at-talk in the transcript of meeting v5. Occurrences are distributed among the team members as follows: Kenny 4 (including once in reported speech), Abby 17, Ewan 21. The term appears predominantly in the first 25 minutes in 32 turns. It then crops up in three further episodes, first [A:547 and E:552] as a synonym for a group of respondents; second about an hour and 20 minutes into the meeting [E:724, E:737, E:750, A:751 and A:753]; and finally in three turns towards the end of the meeting [A:975, E:995 and A:996]. Looking more closely at these episodes we see a number of interesting things.

Right at the outset there are issues with the notion of 'company'. On the positive side, the idea of 'company' as a conceit for the respondents to work with - Kenny, reading from a post-it note, '*each group is its own little company*' [K:13] - is valued as presenting a clear

focus for respondents' group-work. A company will be pitched to investors, have associated products, target markets and so on. However, there are two major drawbacks to using the idea of 'company' to frame the design of some workshop activities. First, this sense of 'company' relies on its prior establishment by the respondent groups in CC1. This is incompatible with the (prior) design of CC1. Second, the collective working on forming a 'company' undermines the teams' objectives to devise activities for respondents that will elicit their personal preferences and the rationales for each of these.

We now look at how each team member makes reference to the 'company' notion. Kenny's references to 'company' all relate directly back to his first use in reading from the post-it note [K:038, 040, 143] so while he does use the term he does not build on it, or from it, during this meeting. Abby's references are more numerous, however looking at them individually we can see that only in the first one [A:070] is she concurring with the 'company' concept – assenting with its appearance on the post-it note. Thereafter all her references to the 'company' concept are to question it on grounds of one of the two drawbacks described above, or to try to conflate it with the term 'theme' that carries a different set of connotations that she prefers.

If we think of 'company', then, as a 'naming of things to be attended to' in the sense of establishing a context for designing (making design moves) it does not seem to work well for two of the team. Is this simply a case of a failure of the team to agree on, and to share a frame, a case of frame conflict as characterized by Schön and Rein? Or is it a frame dispute (within frame differences of interpretations)? Does the 'company' notion work for Ewan then, who uses the term most frequently? Refer to Extract 1.

Whilst Ewan likes the 'company' idea for the positive quality identified above [E:027] he is aware that it presents the problem of loss of opportunities for eliciting respondents' personal preferences - the second drawback we have already noted. At [E:033] he says this directly. At this point, the concept of 'company' has attractive features for drawing respondents together to work collectively around a goal, however the team's aims of eliciting participants' personal references cannot readily be accommodated in (associated with) this conception of 'company'. A dissociation is evident between 'company' and the pursuit of personal

preferences. In designing both associations and dissociations serve the rhetorical construction and refinement of design concepts (Stumpf & McDonnell, 2001).

Here, Kenny proposes a repair (a modification to the concept of 'company') to re-associate 'company' and the personal via the suggestion that they tell respondents that customers of the company should be just like themselves, [K:034]. Ewan's response of '*yeah*' [E:035] is not taken as unqualified assent as Kenny continues to reinforce his proposal [K:036].

There is still trouble though because at [E:037] Ewan enumerates alternative design paths in a reference to the first drawback we identified. This may be a deferral mechanism to accommodate potential disagreement (McDonnell, 2012). He leaves options open, and Kenny in the next turn acknowledges the contingent nature of where their decisions stand with '*probably*'.

 What happens at [E:037] is interesting from a framing perspective because, whilst deferral of design decisions can serve designing constructively (op.cit.), here, lack of either resolution, or systematic pursuit of some conjecture(s), leaves the team unable to make progress. To express it differently, we can see here that 'company' as a named thing for attention ***does not support design moves*** at this moment, in this situation, even for Ewan. Instead, we see a few more exchanges between Ewan and Kenny in which Ewan tinkers by suggesting a design fix, namely [E:039] strong moderator intervention during the workshop to keep respondents on track. Kenny's intervention [K:040] does not address the negative aspect of company but reinforces the positive one they have identified already. Abby has not participated in this episode, at [A:044] she introduces a topic change which is effectively established by the assent of the others [E:045, K:048].

Extract 1: Trouble with the concept of 'company' v5:027-048

027	E	And I- and the whole idea of the the - kind of the mini company, I think is a cool approach because-
028	K	Yeah it's a cool approach and they will like it
029	E	Yeah because it makes it very easy for them to- it's very logical for them to think in story and sales and
030	K	Yeah
031	E	'Cos basically they are:- they're doing their- the job for us in a very natural way
032	K	Yeah, so they can focus on the: fun things rather than trying to understand the task
033	E	It does of course create another challenge, which is the opposite challenge of if it was very personal for them, because then they will be coming from a personal side, now they come from a company side so now maybe the focus is not around what's important for them, but what's important for the company which is typically money. So that is our challenge. How can we keep them within their own personal realm
034	K	Yeah I guess they need to know that target, customers needs to be themself
035	E	Yeah
036	K	Yeah, so like in the first session they should imagine that there are millions of you, and you need to sell this product to them
037	E	And I think that is the cool part, that we don't introduce this before the very end of the first session, or maybe in the first eh, at the start of this session, so we already have that captured, so that stick is in the ground
038	K	Yeah. And they already have this company thinking from the first session probably, because they needed to invest as a company
039	E	Yeah. So we- the moderator needs to always:, and we need to always, if they go out on a tangent and think only money or whatever, we need to draw them back into "this is what we know is important, this is what we agreed on"
040	K	Yeah. And it gives a pretty good flow that we come from this company investment thing, and now we need to sell the product, we need to market the product
041	E	Maybe one thing that they should make is some sort of company slogan, which is the company values
042	K	Yeah, hmm
043	E	And every- and then, when they talk about storytelling or product or sales, it needs to make sense for their company slogan
044	A	Yeah. Maybe we can just write the time:, just like we did last time, so we'll start- [it's- it will be the same]
045	E	[Eight forty-five]
046	K	Yeah
047	A	Yeah. Ehm: and we also need this eh: kind of warm up exercise to include the two new guys
048	K	Oh the two new guys, yeah

Neither the tinkering and the reinforcement of a positive assessment drawn to attention in Extract 1, nor all the later tinkering during the meeting (e.g. extensively with voting mechanisms as described in Section 2.3) compensates for *failure to establish a way of seeing* that is free from the major drawbacks (incommensurate requirements) identified by the team themselves early on in their meeting. Nor does it serve in setting these aside temporarily to enable progress with designing. Effective framing imposes a discipline. It invites and supports certain moves and rules others out. Here it is not some frame that is at fault, then, but rather the team's *inability to work generatively and selectively within the constraints a particular framing imposes.* The notion of 'company' neither serves as a frame to impose a 'what if' discipline for a series of conjectural moves, nor does it serve as instigator of re-framing (which we consider below in Section 3.3). It is not strongly defined, and relies significantly on negative assessments in relation to some important concerns of the team.

3.2 Frame discipline: reflection

The term 'theme' is more pervasive than 'company', appearing in 84 turns distributed throughout the meeting. It is only absent for the period when attention is focused on how to deal with new respondents joining for CC2. Looking more closely at the distribution of references to 'theme' we see that the majority come from Abby (59). It is Abby who first uses the term, and like Kenny's first use of 'company', she does this by referring to the team's documentation from their design of CC1. Refer to Extract 2.

Extract 2: Trouble with the concept of 'theme' v5:085-096

085	A	But I think, I mean, we're ending here, with the: "now imagine that you're a CEO in a company wanting to invest in these themes". So I'm thinking, we haven't made the companies yet, so they can't present a company. So-
086	E	So, wait, okay so, maybe this- could that happen that the first thirty minutes or something, eh: the two new people, they are making name tags over here, and the groups, so group one and group two, (*draws on whiteboard*) are making the company over here and here?
087	A	I guess- I- yeah if-
088	E	And then they- we are putting them together here. So then they have time to, for thirty minutes or something like that, they have time to make the company: and make the kind of get together
089	A	So I'm thinking that the company can't really be:- I mean, here it- the company can be based on values only then. Not any products or anything because that's kind of what we are doing later. So I'm thinking that maybe it's kind of the first half of the day we'll use- we'll spend on making it more concrete, and then we'll make the companies based on something a little bit more concrete than just the values and themes
090	E	Yeah, that could be- this would be the company values that they would create here

091	A	But isn't it hard to- if you have no idea what product you are going to sell, but you just have an idea of "okay, I want to create a company with these values"
092	E	Yeah?
093	K	And I think- I think it's- maybe it doesn't feel so nice for this person, or [these two]
094	E	[To be separated?]
095	K	To be separated so obviously, from the beginning, when they need to part of the rest of the process later
096	E	Oh no, no I agree. Eh: let's scrap this one. Eh:. But there's no doubt that we have to utilize the freshness, or the virginity of these two people. Eh and how do we do that in the best what? 'Cos these- the people who come here, even though they've been with us one time, they're still a little raw and a little virgin themself, so how can we make sure that they can communicate something fairly straightforward, together, err as a unit, where the other person is kind of watching. Or commenting

Abby reminds her colleagues [A:085] how things stand at the end of CC1, quoting from the team's records. The team have been discussing how to handle the new respondents, they want to use their fresh perspectives but also to integrate them with the respondents from CC1. Extract 2 shows an attempt to associate 'theme' and 'company' by conceptualizing 'company' as a collection of values rather than an enterprise with products. Ewan attempts this but at [E:096] concedes both to Abby's objection to (a) 'company' that only comprises values [A:089, 091] and to Kenny's concern that new respondents may feel uncomfortable if kept apart for a long time from the others [K:093]. As a candidate notion for framing, we see that 'theme' serves no better than 'company' to support the generation of design moves because rather than imposing order on the design task, 'theme' generates further problems for the team to solve: first, how to integrate the newcomers and second, something that subsequently occupies a great deal of time, how to get respondents to select from the 'themes' through pitching and voting. At the end of Extract 2 [E:096] Ewan appears to set aside his recent proposal but about 10 minutes later the team are still pushing the same issues round. Refer to Extract 3.

Extract 3: Trouble with the 'company-theme' combo v5:170-175

170	K	So they can say "alright, we saw these three, four themes, and we invested in this one, because of >this and this and this and this". Because that's what they- that's the point where they are. They know why they invested in it, but they don't know exactly how it can be turned into a product and how it can be turned into a business yet
171	A	But it will be:- so it's not a group thing yet, so this is eh
172	E	Individual

173	K	[Yeah, individual. For each person represent the- yeah]
174	A	[Individual. Eh it could easily be three or four] or five eh themes that-
175	E	Different themes, easily. They could- it could be- hopefully they will align a little bit, but it could definitely be that. So, and this is why, and of course maybe I'm repeating myself, I'm coming back to, is it possible that(.) they come here and we spend, >I don't know<, half an hour, forty minutes on them becoming a company, like agreeing on the values of the company, while we're doing the other exercise, the name tag exercise, with the others in for example the sc'- so if they, they come a little asynchronously. So these go in to this room and then the other people come into this room, but there is like a twenty minute gap between them or whatever

More trouble is brewing because conflict between the requirement to elicit personal preferences from respondents and the setting up of activities that encourage group endeavor is back as a problem to be addressed. The lack of development of groups' notional companies is back on the agenda too. This leads to more tinkering, with Ewan suggesting the respondents should arrive at different times [E:175] so that those from CC1 can start before the new respondents join. Not only can we see a similar pattern here, namely that working with a design task framed in terms of 'theme' fails to prompt moves, but we also see that the *failure to confront problematic issues head-on by evaluating the consequences of a line of reasoning (reflecting on moves within frame)* leads to a lot of time (more than 30 minutes) discussing how to solve problems that the team have *generated for themselves* by failing to evaluate – here failing to confront the requirement to elicit personal preferences which they identify as conflicting with designing activities than work to establish group consensus.

A reluctance to undo decisions from the design of CC1 (which is after all a *self-imposed* constraint) generates the need to address a number of issues such as mechanisms for getting people to pitch ideas they are not interested in, and how to maintain motivation among respondents whose preferred ideas are not carried forward. By setting themselves the task of narrowing down from a broad set of themes to a narrower focus based on popularity among the respondents, the design team spend a lot of time designing activities including very detailed voting mechanisms which are subsequently entirely discarded. There are some symptoms of fixation at play here if we define fixation as a reluctance to accept that another line of development is possible (Crilly, 2015: pp 56-57). But, staying with the construct of framing, we have a *failure to evaluate moves in a timely manner during the design process.* This failure to reflect incurs cost – the effort of designing details which will have to be discarded (cf. novice designers' tendencies to commit too soon, e.g. see Christiaans & Dorst,

1992). There are occasions during the meeting when the possibility of revising the design of CC1 is mentioned, but it is never actively pursued. There may be many reasons for this: face-saving between the team members, or between the team and the consultants with whom they have already shared the plans for CC1; or a reluctance to confront the shortcomings of something in which they have already heavily invested. Iteration in designing or the suspension of (some) constraints to pursue conjectures only serves the design task usefully when there is assessment of what those moves amount to – without such reflection iteration is simply going round in circles, and ignoring constraints leads to effort expended on pursuing dead ends.

Examination of the nine references by Ewan to 'theme' indicates another possible source of trouble with 'theme' as a concept to support framing. Four of Ewan's references to 'theme' come immediately after turns in which themes are referenced by a colleague. His use of the term may simply indicate a micro-level conversational strategy - of using the same term to signal topic continuity (relevance preference). Scrutiny of his five other uses of the term show him referring to 'themes' in the sense they are established during CC1. This draws attention to the fact that what the term 'theme' refers to drifts during the meeting because the participants are discussing how 'themes' evolve. During CC2 themes output from CC1 will be reduced in number and fleshed out by the respondents through activities the team are designing - as they are voted on, selected, elaborated and pitched. Themes will become fewer and pick up detail through the transformation into 'companies' (a term Ewan uses most positively as we have seen above) with storied products and their markets. 'Theme' seems to be *a poor device for framing because it is too slippery to impose order*. Many courses of action are discussed, but with no guide rails in place, many workshop activities (design alternatives) are possible and there is *nothing* clear enough *to serve evaluation purposes*.

3.3 Frame discipline: reframing

One way to make progress in designing is to deliberately set aside certain constraints, to 'start somewhere', perhaps to start in several places; and through design moves, experimentation and iteration, to become more familiar with the situation - to understand it better by setting to and tackling something (Glegg, 1971). As Dorst points out, viewed from outside, this particular characteristic of designer behavior can seem aimless (2015: p 68). The team know

what desired outcome they want from CC2, they know neither what apparatus to use nor how to use it (Dorst, 2012, 2015) and they do not exhibit the skills for either compromising over the conflicting requirements they have been given or created for themselves, or for creatively reframing to make the conflicting requirements generative of a new perspective. Instead of forcing the contradictions to help them think differently (reframe by dissociation) they tend to plaster over these by association to create vaguer, broader concepts. The example of Kevin doing this at [K:034] has already been mentioned above. In the long period in the meeting when the team talk about voting they side-step the issue of dealing with respondents whose preferred ideas are voted out by moving from voting with notional money (investments) to voting with 'hearts' and then later 'stars', never addressing the substantial issue. Refer to Extract 4.

Extract 4: Trouble with voting v5:655-663

655	A	So let's assume that they are choosing (.) one, eh: one theme
656	E	I think they should- yeah?
657	A	And: they write it down on a post-it, they share back and say "okay I chose this one because of this and this and this", and it can't just- I mean, Rose and Will needs to really ask why and get deeper into it so that they know even better themselves why they actually chose it. To make them reflect over this
658	E	So you still think we should only do it for one, not- they don't- they shouldn't have three hearts. They can do all on three or two on one (.) and. 'Cos I kind of wanted that discussion, "why is this still here? Why- what is the value in this one? You didn't want to put it on top, but it still- you're still dragging it with you. What are the features and the: the values of this?"
659	K	I think it can be done in the moderation. That- that Rose or Will can just ask "why did you not choose that instead?" or "why did you not choose that?"
660	A	Yeah. And, I mean, we have like (.) two minutes, per person, for this, to share back, in this eh session here
661	E	Yes, and it's a fairly important part, it's the conclusion of this in many ways
662	A	Yeah yeah, I-
663	E	So we can't down prioritize it. It's kind of this is the fruit of our labour that day. It will be what sustains us to three days here. Not a hundred percent, but in many ways it-

Extract 4 gives a flavor of the discussion about voting; here we see that Ewan's concern to elicit from respondents what underlies their preferences *does not prompt the team to re-conceptualize* what the activities might be. Kevin [K:659] folds into the voting arrangements as they currently stand [A:657], an accommodation to Ewan's concern expressed at [E:658] by associating the information he wants to capture with the planned activity of respondents'

speaking about their top choice. Kevin tinkers with the design to do this. *Here would have been an opportunity to reframe* through the dissociation of the need to focus the respondents on a smaller set of themes with the requirement to gather rich detail about their individual preferences. This is one of several occasions when a *conflict is not resolved creatively by reframing, nor is it solved by negotiating one of the requirements to be set aside to be reintroduced later, nor is it solved by deliberately deciding to deem one or other of the requirements unobtainable.* (See Dorst, 2015: p 51 for a description of precisely these three options when getting stuck in this way.) Any of these three outcomes would be evidence of framing supporting evaluation of (reflection on) design moves. Instead we have avoidance of dealing with the issue effectively and this in turn gives rise, inevitably, to a reinforcement of a sense of circularity in this design process for an observer as well as for the participants.

4. Discussion and broader significance

In the account given in Section 2 attention is drawn to team members' apparent awareness that they are making little, if any, progress. Whilst they do not explicitly mention 'going round in circles' their comments show that each has a sense that they often return to an earlier point of departure *without new insights* about how to proceed. So it is not self-awareness that is at issue here. What is surprising is that the team does not use any strategies to try to fix things. For example, they don't use the repertoire from popularized design thinking (empathizing, problem defining, ideating/brainstorming, prototyping, and testing (IDEO, 2016)) to deal with problematic issues. It may be that knowing each other well and having worked together for some time inclines them to an informality which does not serve design task efficiency. Aside from each commenting, at different moments, that they are not making progress, they don't take formal measures to assess progress and decide how to proceed: there is little evidence of meeting management.

What design expertise does this team have for the design task they are tackling? They are employed as 'user involvement' designers and we hear them frequently hypothesize scenarios of user behavior (respondents' reactions to workshop activities). So in this there *is* evidence of the designers empathising (e.g. Extract 1 029-032; Extract 2 091-093; and the whole of Extract 3) and of sketching scenarios (e.g. Extract 2 086). These *are* design thinking strategies. There is one point where Ewan experiments (prototypes) to test his idea that

respondents will have differing perspectives on a particular concept ('*eco*'). But apart from these the practice of a range of design thinking skills is not in evidence. It is inappropriate to make any claims about the capabilities of the participants on the basis of examining their interaction in a single meeting, however the examination of this event draws attention to how the team's failure to make progress can be seen as a failure to impose discipline on their design task during this time.

Framing of design tasks can lead to a course of design activity (design moves, reflection, further framing, reframing) and thence to design outcomes valued for effectiveness or for their innovation. In such cases, retrospectively, we can say the framing was good. Framing can also be regarded as poor retrospectively if the resulting design has shortcomings for some stakeholder(s), or if the design process was inefficient.

This study draws attention to how failure to regulate a design process can be interpreted as failure to operationalize framing effectively. Frame awareness, if we have it, gives us a way to confront our assumptions. In the design context, the concept of frames gives us a way to talk about how designers impose order on a design task, without which they confront under-constrained situations or paralyzing paradoxes. The account of meeting v5 given here in terms of frame failures exhibits both these dilemmas as the team move around in a design space where too many possibilities are kept in play, yet everything they consider comes up against a constraint with which it is incompatible. Any frame has generative capacity, but it is a designer's skill to set *suitable* frames and *operationalize their capacity to impose order*. Using framing as a lens to interpret the meeting described here allows us to see that the opportunities the discipline of framing imposes contrast with what took place. The causes of what is observed is another matter: it might be team members' lack of design skills or lack of expertise in designing co-creation workshops specifically. Or there may have been external factors to which we have no access that led the team to make so little progress on this occasion.

Design professionals, when they are designing in some domain in which they have experience and expertise, have a repertoire of frames (Dorst, 2011), stylistic predilections (Tonkinwise, 2011) or, expressed more broadly, guiding principles (Lawson, 1994) acquired from that experience that allow them to shape designs through framing effectively. If we accept that this is the case, there remains a set of tantalizing open questions over the extent to which framing is a generic skill - a designerly way of approaching effectively (any) design

situation, and the extent to which operationalizing framing successfully rests on the imposition of order derived from expertise in some particular design domain.

References

Biskjaer, M. & Halskov, K. (2014). Decisive constraints as a creative resource in interaction design. *Digital Creativity 25:1*, 27-61.

Brown, T. (2009). *Change by Design: How design thinking transforms organizations and inspires innovation*. New York, USA: Harper Collins.

Christensen, B. T. Ball, L. J. & Halskov, K. (Eds.) (2017). *Analysing Design Thinking: Studies of Cross-Cultural Co-Creation*. Leiden, The Netherlands: CRC Press/Taylor and Francis Group.

Christiaans, H. & Dorst, K. (1992). Cognitive Models in Industrial Design Engineering: A Protocol Study. In D.L. Taylor and D.A. Stauffer (Eds.), *Design Theory and Methodology*, New York: ASME.

Crilly, N. (2015). Fixation and creativity in concept development: The attitudes and practices of expert designers. *Design Studies 38*. 54-91.

Dong, A. Kliensmann, M. & Valkenburg, R. (2009) Affect-in-Cognition through the Language of Appraisals. In J.McDonnell and P.Lloyd (Eds.), *About Designing: Analysing Design Meetings*. (pp.119-133). Oxford: Taylor & Francis Group.

Dong, A. Davies, K. & McInnes, D. (2005) Exploring the relationship between lexical behavior and concert formation in design conversations. In *Proceedings of ASME international design engineering technical Conference and Computers and information in engineering Conference.* Long Beach: California.

Dorst, K. (2011). The Core of 'Design Thinking' and Its Application. *Design Studies 32*. 521–532.

Dorst, K. (2015). *Frame Innovation: Create New Thinking by Design.* Cambridge: MIT Press.

Dorst, K. & Cross, N. (2001). Creativity in the design process: co-evolution of problem-solution. *Design Studies 22*, 425-437.

Glegg, G. (1971). *The Selection of Design*. Cambridge: CUP.

Have, P. ten (2007). *Doing conversation analysis*. 2nd ed. London: Sage.

IDEO. (2016) *Design Thinking Resources.* http://www.ideou.com/pages/design-thinking-resources.

Lawson, B. (1994). *Design in Mind.* Oxford: Butterworth Architecture.

McDonnell, J. (2009). Collaborative Negotiation in Design: A Study of Design Conversations between Architect and Building Users**.** *CoDesign 5:1*, 35-50.

McDonnell, J. (2011). Impositions of order: A comparison between design and fine art practices. *Design Studies 32*, 557-572.

McDonnell, J. (2012). Accommodating disagreement: A study of effective design collaboration. *Design Studies 33*, 44-63.

Onarheim, B. & Biskjaer, M. (in press). Balancing Constraints and the Sweet Spot as Coming Topics for Creativity Research. In L. Ball (Ed.), *Creativity in Design: understanding, capturing, supporting*.

Schön, D. (1983). *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books.

Schön, D. & Rein, M. (1995). *Frame Reflection: Toward the Resolution of Intractable Policy Controversies.* New York, USA: Basic Books.

Stanford University (2016) *Our Way of Working*. http://dschool. stanford.edu/our-point-of-view/ #design-thinking.

Stumpf, S. & McDonnell, J. (2002). Talking about Team Framing: Using Argumentation to Analyse and Support Experiential Learning in Early Design Episodes. *Design Studies 23*, 5-23.

Tonkinwise, C. (2011). A Taste for Practices: Un- repressing Style in Design Thinking. *Design Studies 32*. 533–545.

Valkenburg, R. & Dorst, K. (1998). The Reflective Practice of Design Teams. *Design Studies 19*, 249-271.

Valkenburg, R. (2000). *The Reflective Practice in product design teams.* PhD Thesis TU Delft.