Timescales and ideaspace: An examination of idea generation in design practice

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The generation of novel ideas is an important and difficult part of the creative design process. Much of the research on idea generation is focused on formalizing techniques to support idea generation and characterizing the effectiveness of these techniques as measured by quantity, quality, and creativity of ideas. Less is known about idea generation 'in the wild,' particularly idea generation across different timescales (i.e., idea generation across a multi-month project alongside idea generation in a period as small as several minutes). We present a qualitative case study of a professional design team's use of idea generation with analyses at five emergent timescales. At each level we look at the structure, the content, and the actions of the team.
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Idea generation, as part of the creative design process, can be understood as an activity where designers generate and consider multiple potential solutions to a given problem. A growing body of research investigates idea generation as a critical part of the design process. However, much of this research is conducted in lab settings and is concerned with the effectiveness of these techniques as defined by quantity, quality, and originality of ideas generated. We know little about how these techniques are deployed by designers 'in the wild' and situated in their overall design processes.

The work we present here seeks to examine how professional designers generate ideas in their everyday design work. Our analysis is conducted on a longitudinal video dataset that captures the work of a small design team working from October 2015 to January 2016 (Christensen & Abildgaard, 2017). We focus on idea generation practices in context and in relation to broadly accepted idea generation techniques by examining the activities of the design team at different timescales. We begin at the broadest level, revealing different

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underlying structures at smaller and smaller levels of detail as we move from fifteen hours of data occurring across a three-month period, down to two minutes of a design team discussion. At each level, we examine the idea generation practices of the team, focusing on the structure we see, the activities of the design team, and the ideas they generate.

1 Background

Idea generation is a critical part of the creative design process likely related to the quality of the final design solution. For example, early phases of the design process, including idea generation, have been shown to have the highest impact on the quality and manufacturing costs of the final design (Römer, Pache, Weißhahn, Lindemann, & Hacker, 2001).

While idea generation is important, designers of all levels and across design disciplines, experience limitations in generating many diverse ideas (Bruseberg & McDonagh-Philp, 2002; Linsey et al., 2010; Sio, Kotovsky, & Cagan, 2015; Vasconcelos & Crilly, 2016). One reason for this is a cognitive difficulty, termed fixation, where designers develop an early attachment to an initial idea and stop considering alternatives (Ullman, Dietterich, & Stauffer, 1988). Another reason, also a form of fixation, is an inability to break away from known examples or solutions (Linsey et al., 2010).

In response to these difficulties, a number of techniques for generating many diverse ideas have been developed in areas such as design, psychology, business, and engineering. These include brainstorming (Osborn, 1953), Morphological Analysis (Allen, 1962; Zwicky, 1969), Synectics (Gordon, 1961), Brainwriting (Geschka, Schaude, & Schlicksupp, 1976), Nominal Group Technique (Van de Ven & Delbecq, 1974), and affinity diagraming (Mizuno, 1988).

Much of the current research on idea generation techniques is concerned with the effectiveness of the technique as defined by the novelty, variety, quantity, and quality of the resulting ideas (Shah, Smith, & Vargas-Hernandez, 2003). A subset of this research explores the nature of idea generation, covering topics such as the effects of timing and time constraints (Liikkanen, Björklund, Hämäläinen, & Koskinen, 2009; Tseng, Moss, Cagan, & Kotovsky, 2008), the use of examples (Perttula & Liikkanen, 2006), and the role of representation type (text vs. graphical) (McKoy, Vargas-Hernández, Summers, & Shah, 2001). Other research focuses on tools and techniques to support idea generation and methods by which to evaluate them (Bilda, Gero, & Purcell, 2006; Daly, Yilmaz, Christian, Seifert, & Gonzalez, 2012; Dorta, Lesage, & Pérez, 2009; Hernandez, Shah, & Smith, 2010; Jonson, 2005; Linsey et al., 2011; Nelson, Wilson, Rosen, & Yen, 2009; Shah et al., 2003). A common theme in several of these studies is an emphasis on generating a large number of ideas

or potential design solutions, with the understanding that a greater number of ideas will likely lead to better design solutions.

Against the backdrop of idea generation techniques as a whole, some research instead seeks to identify and assess common ingredients, components, or heuristics that make up these techniques and may be ultimately responsible for their effectiveness (Daly et al., 2012; Hernandez et al., 2010; Smith, 1998).

Much of the design research work to date has been conducted in lab settings and at the timescale of design meetings. As a result, we know very little about when and how designers employ these techniques, or other idea generation techniques, in their design processes. More broadly, what do we know of designers in practice and their approaches to idea generation? The few studies addressing this topic are very general, for example mention of particular idea generation techniques in interviews of professional designers (Herring, Jones, & Bailey, 2009).

2 Approach

The opportunity to explore idea generation 'in the wild' was made possible by a specific video dataset collected and provided by the Design Research Thinking Symposium (DTRS11) (Christensen & Abildgaard, 2017). Our approach to studying idea generation was grounded in this dataset and resulted in five levels of analysis across different timescales. Below, we briefly characterize the dataset and high-level features of our analyses, leaving the detailed methods to be presented alongside the findings for each level.

2.1 Dataset

This study analyzes a shared dataset (Christensen & Abildgaard, 2017), which followed the User Involvement design team of an international car company from October 2015 to January 2016 as they engaged in Phase II of a design project in collaboration with the company's accessories department. This design team was tasked with developing a concept package for premium car users that would increase 'take rates' (v21, 026) of car accessories in the Chinese market by better allowing the company's brand values to 'shine through' (v21, 026). The data captured portions of the team's development, implementation and debrief of a two-day co-creation workshop with Chinese lead users to understand cultural values that could inform the company's approach to developing and selling accessories in China. While a number of individuals were involved in the design activities, the core design team was made up of three user experience researchers: Ewan, Abby and Kenny. Additional participants involved in the project included an intern, two stakeholders, three consultants, nine Chinese lead users, two translators, four colleagues brought in to assist with the generation of ideas, and one participant observer involved in collecting data in situ.

The dataset, which documents some of the work of this team, includes two interviews and 20 videos (v2 – v21) capturing interactions among the design team during their meetings. The videos are each 30–90 min in length, and represent interactions at different points in the project. In addition to the videos, transcriptions of the videos and photos of some of the artifacts generated by the team during their interactions were available. Quotations from the transcript are referenced by the video and line number as seen above.

2.2 Data analysis

Our grounded qualitative analysis began with these research questions:

- **Broad Question:** Given the documented work of the design team, how does the team appear to generate ideas?
- **Guiding Questions**: Who is generating ideas, what is the topic of the idea generation, when does the idea generation take place, what is the structure of the idea generation, and what techniques or tools does the team employ to generate ideas?

These questions were examined across five timescales (levels) from 20 video segments (v2 – v21) of design meetings across three months of time, to two minutes of the design team 'sharing back' a single idea. As we were interested in the real time activity of the design team, the two interviews were not included in this analysis. Rather than apply predetermined or linear timescales to determine the levels of analysis, the five levels emerged based on the activities of the design team in this particular dataset. Examination at each level surfaced characteristics of the team's idea generation process that prompted us to look closer at certain parts of the team's work.

At the broadest level, time is represented as we know it, in terms of calendar time measured in days, weeks, months, etc. Subsequent levels of analysis were defined by the researchers based on the findings uncovered at the previous level. As a result, different data might have yielded different timescale levels of analysis.

Each step of the way, in order to move down a level and look in more detail, we make two reduction moves: focus and scope. The first move is to direct a certain area of focus on the data, honing in on a topic and leaving behind things outside of that topic. The second move is, within that area of focus, to scope the data down to an amount feasible for a more detailed analysis. The timescale of our first level of analysis was determined by the DTRS11 organizers (the shared dataset), however for subsequent levels, the timescale was defined by the researchers' chosen area of focus. These areas of focus are idea generation, formal idea generation, idea 'share back' activities, and idea discussions. In examining the structure of each level, the data are divided into

subcomponents labeled as follows: video, segment, activity, idea discussion, and micro-episode. A diagram illustrating our methodology for generating five levels of analysis is shown in Figure 1.

Our approach yielded five timescales: twenty videos capturing segments of design meetings (Level 1), three videos (meeting segments) in which idea generation occurs (Level 2), three formal idea generation segments within these meetings (Level 3), the 'share back' of ideas within one idea generation segment (Level 4), and the discussion of one idea within that 'share back' (Level 5). The data selected for each level of analysis are detailed in Figure 2. We include a short methods section alongside each level of analysis in the work that follows.

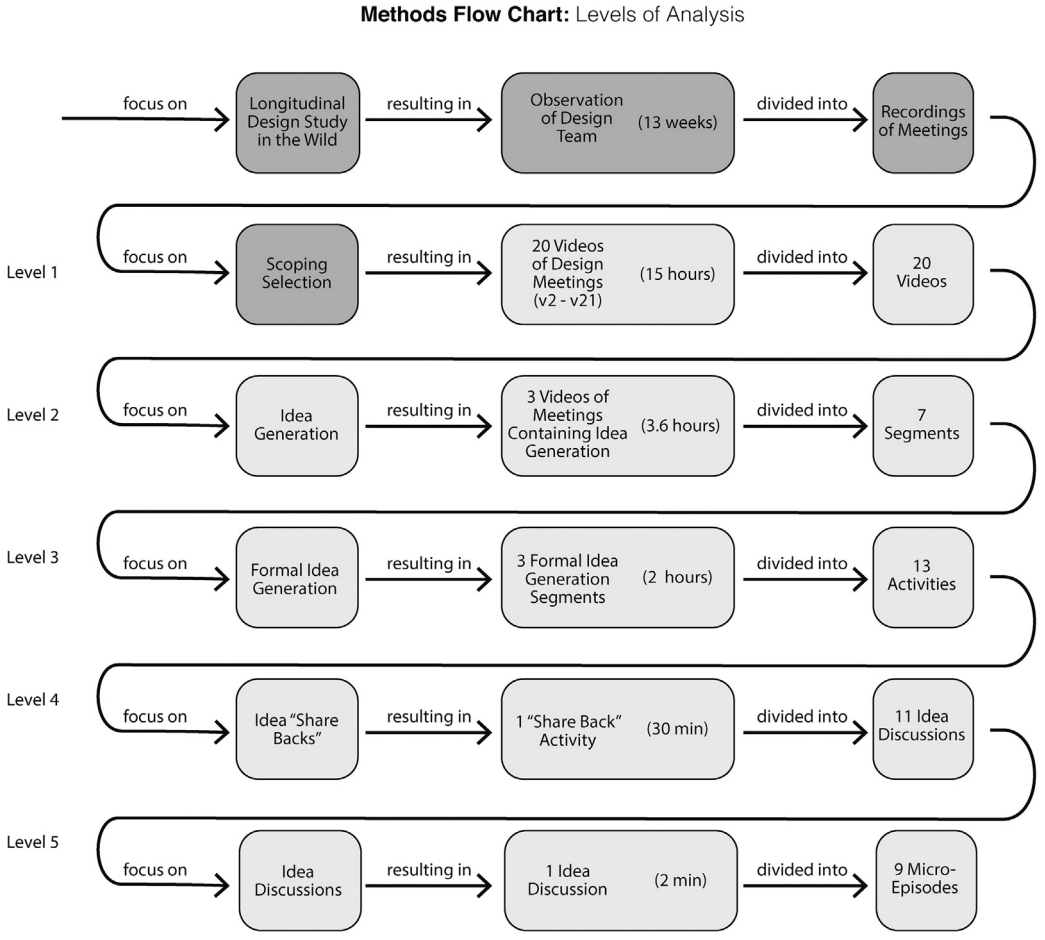


Figure 1 Flow chart of emergent levels used in the analysis. The path of the arrows traces, for each level, the researchers' chosen area of focus, resulting data selected to be analyzed further, and the structural divisions found at each level leading to the next level of analysis. The dark gray boxes show areas scoped by the DTRS11 organizers while the light gray boxes show areas scoped by the authors

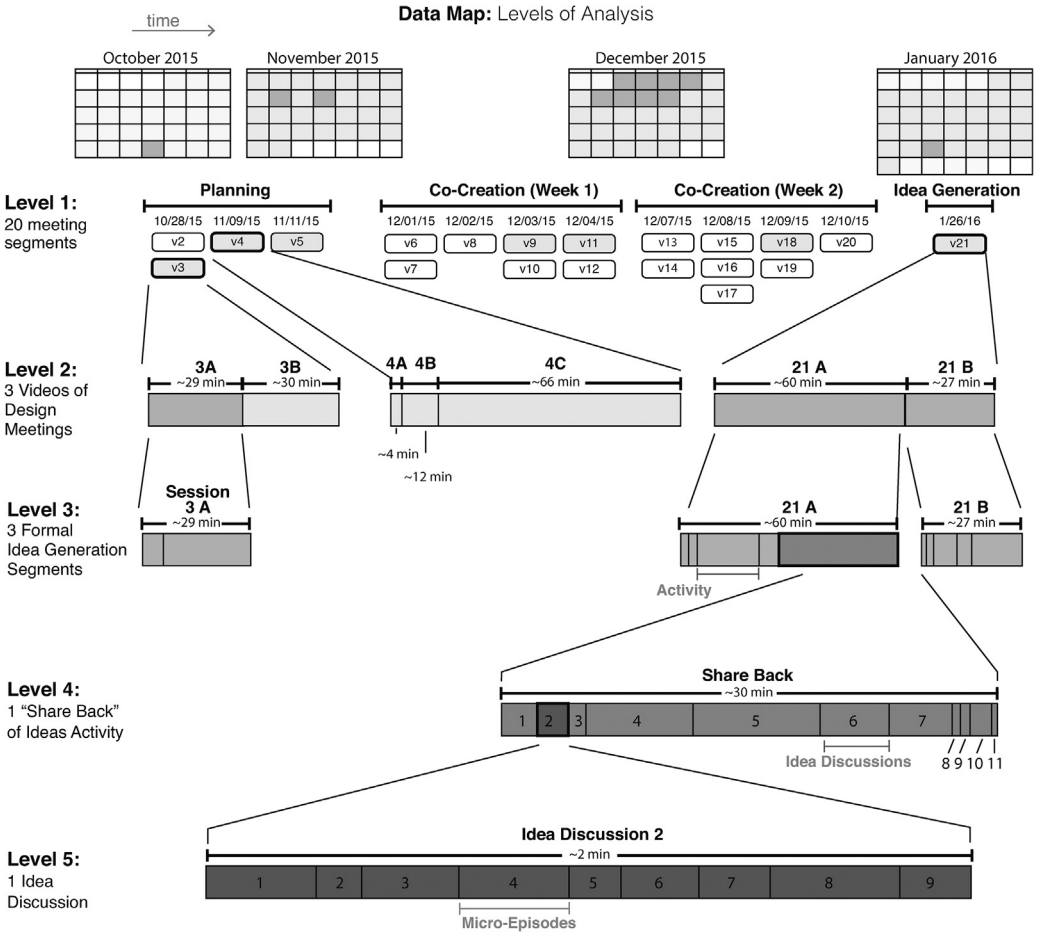


Figure 2 This figure illustrates (top to bottom) the five emergent timescales of analysis with data scoped by the authors. Level 1 contains the shared dataset of 20 videos (boxes) of design team activity, over 12 days (columns), spanning a three-month time period. Videos are grouped into four phases with shaded boxes indicating those videos we identified as containing idea generation. Level 2 depicts three videos (v3, v4, and v21) containing idea generation divided into seven segments. The shaded segments represent places in the data where the design team dedicates time explicitly to idea generation. Level 3 depicts the three formal idea generation segments occurring in v3 and v21, divided into 13 activities. Level 4 depicts the 'share back' of ideas activity in segment 21A subdivided into 11 idea discussions. Level 5 depicts the two-minute discussion of one idea within the 'share back' subdivided into 9 micro-episodes

What does quality mean for our analysis? Using a metaphor of continuous quality control, Walther, Sochacka, and Kellam (2013) argue that the quality of qualitative research is affected continuously by decisions and actions related to the making and analyzing of data. In this case, we were not responsible for the collection of the data, but we are responsible for our choices concerning what data to address and how to analyze the data. Shenton (2004) also provides guidance on how to think about issues of trustworthiness in qualitative research. Drawing on foundational ideas about what contributes to the quality of qualitative research, Shenton identifies specific strategies that a researcher

can adopt to improve the trustworthiness of their work. The notions of 'providing a thick description,' 'providing an audit trail,' and 'frequent debriefing sessions' are central to the quality of the work that follows.

3 Level 1: idea generation across the dataset

In our initial analysis, at the broadest level we focus our attention on a large portion of the team's design process (videos of 20 design meetings spanning a three-month period) and ask the following question: Given the documented work of the design team in these twenty videos, how does the team appear to generate ideas?

3.1 Level 1 methods

Our initial analysis of the dataset began by utilizing the 20 videos of design team meetings (v2 − v21). Two researchers familiarized themselves with the dataset by chronologically listening to the audio of the 20 design meeting videos (each lasting between 20 and 100 min and totaling over 15 h). One researcher did a second pass, including viewing a sample of the videos of the design meetings, which resulted in the identification of videos where idea generation seemed prominent. The second researcher confirmed the presence of idea generation in these videos.

3.2 Level 1 findings

At this broad level, the design team plans a two-day co-creation workshop, runs the workshop in China, and later conducts an idea generation session using the insights gathered in China. The design team engages in idea generation throughout the dataset. A map of the data at this level is illustrated in Figure 3.

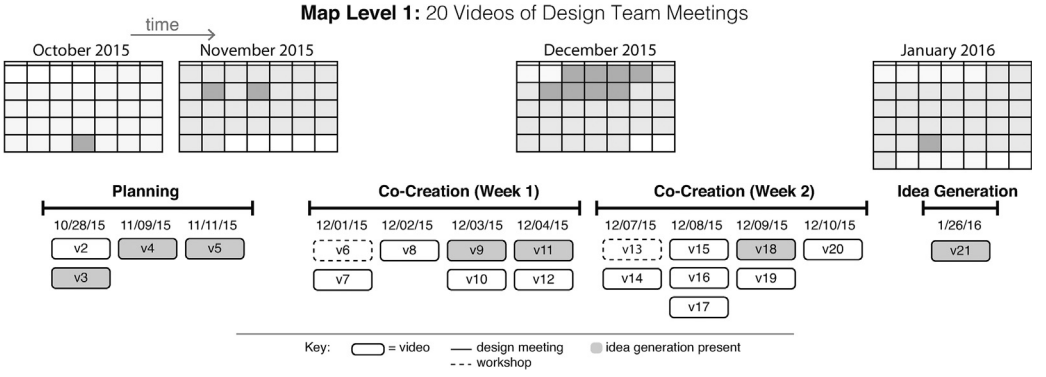


Figure 3 This figure chronologically maps (left to right) the 20 videos analyzed at the first level of analysis. Each block represents a video, solid outlines represent design meetings and dashed outlines represent workshops. The gray shaded boxes indicate videos found to contain idea generation. Videos are dated with each column representing a single day and grouped into four phases depicting the team's planning, their two weeks in China, and the final idea generation segment

Idea generation was found to be present in at least seven meeting segments (v3, v4, v5, v9, v11, v18, v21), indicated by the shaded boxes in Figure 3 and detailed in Appendix 1. At this broad level, we see that idea generation is present throughout the dataset. Not only does the design team generate ideas leading up to the workshop, but also during the two weeks running the workshop in China, as well as after the workshop when the team has returned. At this level, we begin to notice that in these seven videos containing idea generation, there are moments where the team has explicitly planned for idea generation, as well as moments where the idea generation appears to naturally happen as part of design conversations.

4 Level 2: segments of three meetings containing idea generation

Examining the 20 videos of design team meetings revealed seven videos where the team engaged in idea generation. The identification of such videos provided a chance to explore the design team's idea generation in more detail. If we focus our attention more narrowly on exemplars of such idea generation, how does the team appear to generate ideas?

4.1 Level 2 methods

At the second level of analysis, we focused attention on idea generation and narrowed our scope to three of the seven videos that we found to contain idea generation: v3 (55 min), v4 (77 min), and v21 (88 min). These videos were selected because they represent the breadth of idea generation seen in the dataset. Video 4 (v4) contains what appears to be naturally occurring idea generation, discussion, and selection of ideas. Video 21 (v21) is comprised entirely of explicit deployment of idea generation techniques. Video 3 (v3) is made up of a mix of the two. Using a combination of video, audio, and transcripts, one researcher segmented these videos down into seven smaller subsections we called segments, based on ***who*** is generating ideas, ***what*** the topic of their idea generation is, and ***how*** are they structuring their idea generation. This segmenting work was refined through debriefing sessions with the other researchers. Figure 4 shows a visual depiction of this level of analysis.

4.2 Level 2 findings

At this level we uncover a number of different contexts across which the designers generate ideas: ***who*** is generating ideas, ***what*** is the topic of their idea generation, ***how*** are they structuring their idea generation, ***when*** does it occur, what ***language*** is being used, and ***where*** it takes place. Figure 5 provides an illustration of how three of these elements — who, what, and how — change across the seven segments of the three videos identified in Level 2. Who is generating ideas for example varies across these seven segments. While it is largely the core design team — Ewan, Abby, and Kenny — others also participate including the participant observer, the intern, and individuals external to

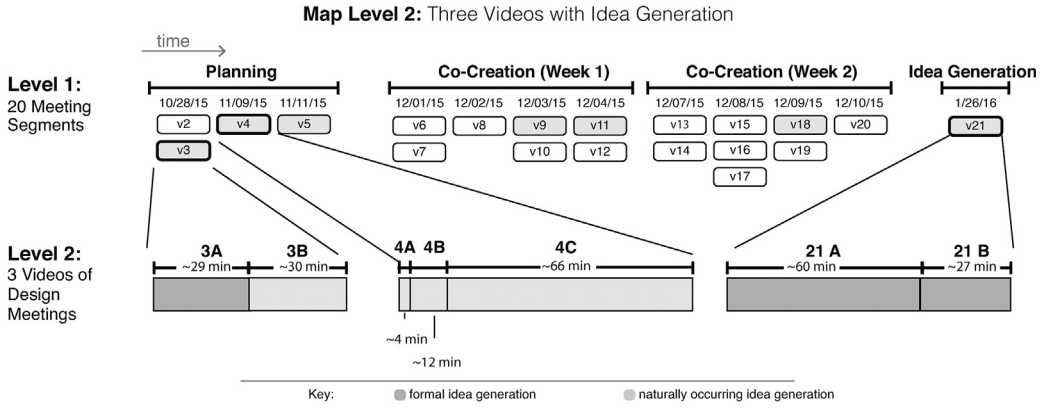


Figure 4 This figure chronologically maps (left to right) the three videos analyzed at the second level of analysis. Each video was divided into segments based on characteristics such as ***who*** is generating ideas, ***what*** the topic of their idea generation is, and ***how*** they are structuring their idea generation. The dark gray shaded boxes indicate segments where the team engaged in formal idea generation. The light gray shaded boxes show where the team engaged in informal, naturalistic idea generation

the project who are brought in explicitly to help generate novel ideas. While the design team's overall goal is to increase take rates in accessories sold abroad, they have a number of sub goals that become idea generation topics. For example, the design of the lunch activity (v4B) or who should be recruited for the co-creation workshop (v3A).

Of the many different contexts in which idea generation takes place across the three videos in Level 2, the ***how*** — structure of idea generation — is noteworthy

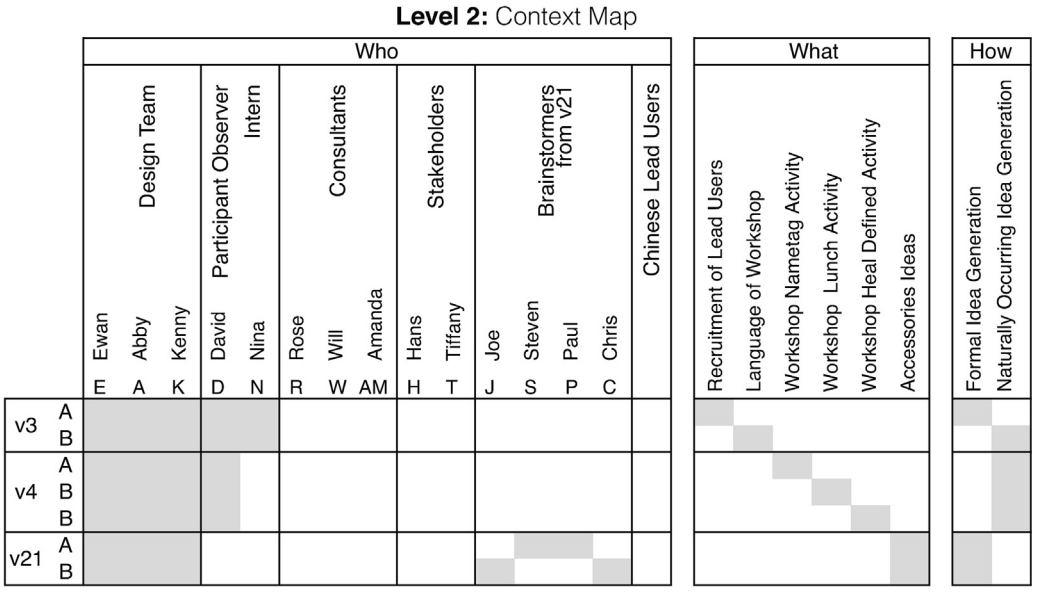


Figure 5 This figure provides an illustration of how the context changes for each of the seven segments; ***who*** is generating ideas, ***what*** the topic of their idea generation is, and ***how*** they are structuring their idea generation

because we notice at least two different structures of idea generation as deployed by the design team. We label these structures formal idea generation and naturally occurring idea generation.

Formal idea generation at this level resembles broadly accepted idea generation techniques such as individual brainstorming and affinity diagraming (Mizuno, 1988). These were identified as moments where the design team explicitly acknowledges that they are setting aside meeting time to generate multiple ideas, and explicitly express rules and guidelines for generating ideas. For example during video 3 (v3) Ewan begins the segment of the meeting with 'Alright, should we do five minutes? On this one? … Quantity over quality. And, yep, make it happen. And if- if-you know something we have said before, still write it down, just you know duplicate' (v3, 001). This statement precedes a timed five-minute brainstorm where the design team along with the participant observer and intern generate ideas individually and write them on post-it notes.

We also identify moments of conversation where ideas seem to be generated naturally, discussed, and decided on without explicit mention of idea generation being the goal. In video 4 (v4) for example, we see a more naturalistic 'So then after lunch we do exercise number 1-I wonder during the lunch (.) if we should- so we are planning- or we had a plan to do some sort of priming during the lunch- at least half lunch. Should that be ehhh: pillar priming' (v4, 059). This is followed by ideas and decisions about the overall structure of lunch as well as diving into some of the details such as type of food, what content to introduce, and how to introduce it. The team generates a number of potential design alternatives related to activities during the lunchtime of the workshop, however there is not an explicit structure for generating and selecting or sharing ideas set forth by the team. While the design team may have an understanding that they are tinkering with the general idea of an activity during lunch, they do not make explicit that they plan or expect to generate new ideas during this time. At the end of the lunch discussion, some elements of the conversation are written on the board by Ewan, but ideas are not rigorously captured on post-it notes as they are in the formal idea generation segments.

Looking at the seven identified segments across these three videos, the team engages in formal idea generation in three segments; the first part of video 3 (v3A), the first half of video 21 (v21A) and again in the second half of video 21 (v21B). Outside of these three formal periods, members of the design team generate ideas as part of meeting activities not explicitly dedicated to idea generation (v3B, v4A, v4B, v4C).

5 *Level 3: formal idea generation within meetings*

Examination of the three videos of the design team meetings containing idea generation revealed multiple instances of the team engaging in formal idea

generation. The identification of such segments provided a chance to explore formal idea generation in an 'in the wild' case study. If we focus our attention more narrowly on exemplars of such formal idea generation, how does the team appear to generate ideas?

5.1 Level 3 methods

At this level, we focus attention on formal idea generation and narrow our scope of analysis to three of the seven segments (v3A, v21A, v21B). These segments were identified by the design team's explicit verbal introduction of a topic and acknowledgment that they were going to dedicate time to generating ideas. One researcher qualitatively analyzed these formal idea generation segments using video, audio, and transcripts with attention to who was involved, the content of the discussion, and the actions that were taking place. This analysis work was refined through debriefing sessions with the other researchers. Graphical representations of the segments were created to support this analysis. These graphical representations are shown in Figure 6 and discussed below.

5.2 Level 3 findings

At a broad level, the three formal idea generation segments selected for analysis differ in a number of ways: who is participating, the topic of idea generation, duration, and when in the larger design process they take place (as noted

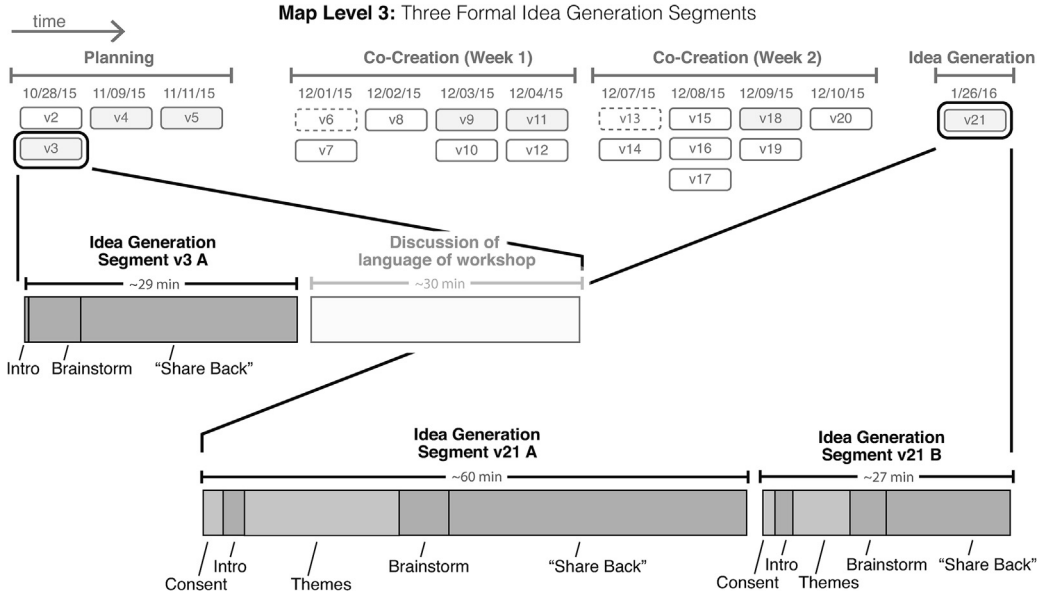


Figure 6 This figure maps the third level of analysis – three formal idea generation segments further divided into various activities. The relationship of the three segments to the overall dataset is seen in the top exploded view. Each segment contains three common activities, an introduction, individual brainstorming and a 'share back' of ideas (dark gray boxes). The segments in video 21 also contain consent to videotape and an introduction to project themes activities (light gray boxes)

in Level 2). Despite these differences, we notice a common set of activities that emerge in all three segments. Figure 6 provides a graphical depiction of these three idea generation segments. All segments contain three main activities: introduction of the topic of idea generation, followed by individual brainstorming, and concluding with a 'share back' of ideas. During idea generation segments in 21A and 21B, there are two additional activities: gaining consent to video record and introducing the participants to the project and relevant cultural themes. These additional activities are likely a result of the fact that colleagues, new to the project, have been brought in to generate ideas, whereas in video 3 the idea generators were already familiar with the project.

We provide an overview of segment 21A as an example of the structure of these formal idea generation segments. The design team characterizes this as 'a brainstorming session' (v21, 033) to generate 'accessories related ideas' (v21, 033) that could help 'brand values [of the company] ... shine through in China' (v21, 026). Two colleagues, Steve and Paul, who until this point were uninvolved with the project, are brought in to provide a fresh perspective and help 'look at new angles' (v21, 003).

During this segment (21A), the design team explains and receives consent to video record the session. Next the team provides an introduction orienting Paul and Steve to the general format and goals of the session, which are quantity and breadth of ideas related to accessories, defined broadly as 'products', 'services', and 'communication' (v21, 033). Next, the design team gives a short description of their project and shares the results of their China co-creation workshop, including cultural themes and subthemes. During the description of the themes, Paul and Steve are given post-it notes and instructed to document ideas as they think of them. After introducing the themes, Ewan facilitates a five-minute 'individual' brainstorm during which the colleagues continue to generate ideas. The rest of the segment (about 30 min) is spent 'sharing back' many, but not all, of Paul and Steve's ideas. Paul and Steve read ideas off their post-it notes one by one. The team then spends various amounts of time discussing the ideas during which time they place the post-it notes on the whiteboard near similar ideas.

When focusing attention on these segments of formal idea generation we notice a common structure of major activities – introduction, 'brainstorming' and 'share back' in all three segments (the quotation marks indicate the terms used by design team members). While as a whole this structure does not reflect any particular named idea generation technique, we notice common techniques such as a timed individual brainstorm and affinity diagraming with post-it notes seen in the 'share back'.

At this level we also notice a variety of strategies within this larger structure of these activities. During the introduction for example, we see explicit guidelines

laid out for idea generation. During all three segments, quantity of ideas is mentioned as a goal. For example in segment 21B Ewan states 'quantity is totally fine, doesn't have to be quality, just start with the obvious' (v21, 001). We also see breadth of ideas as a guideline mentioned several times in segment 21A by different members of the design team. For example 'whatever ideas, accessories related ideas, you have' (v21, 033). Abby even suggests that if the participants cannot think of ideas related to health, they can draw on experiences from 'their own everyday life' (v21, 146). While the team does not necessarily justify why these guidelines are important, they do align with common components of idea generation techniques such as 'mass production' and 'past experience' as well as some of the classic rules of brainstorming (Smith, 1998; Zwicky, 1969).

Other strategies can be seen at a more structural level. In segments 21A and 21B, the team decides to bring in people new to the project to generate ideas, rather than generating ideas within the design team as seen in segment 3A. Ewan explicitly acknowledges this during the introduction in 21A, telling the colleagues that the team has 'been kind of institutionalized' by the project and has brought them in to 'look at new angles' (v21, 003). This practice is resonant with Smith's characterization of soliciting ideas from outside sources as special resource strategy (Smith, 1998). Another strategy seen in the structure of the formal idea generation segments is the idea of individual versus group practices. Each segment has explicit time set aside for first generating ideas individually, then sharing them and building off of others' ideas. These practices are resonant with idea generation strategies, like Smith's 'interpersonal strategies' aimed at balancing the benefits of both individual and group practice (Smith, 1998).

Display and visual externalization is seen as another strategy the design team employs throughout these formal idea generation segments. Pictures and text descriptions of each of the themes described in the introduction are displayed on the wall of the room where the segment takes place. These visuals are gestured to during the introduction and parts of the 'share back'. The team also uses post-it notes as a visual tool that seems to serve many purposes. Ideas are written on post-it notes. When ideas are shared, these notes are put on a whiteboard in the room where everyone can see them. Here they are moved around and similar ideas are grouped together.

6 *Level 4: 'Share back' within a formal idea generation segment*

Looking at the three formal idea generation segments (v3, v21A, v21B) revealed a common structure in which 'brainstorming' was used to generate ideas and a 'share back' was used to discuss those ideas and start to form clusters of related ideas. The 'share back' activity emerged as interesting in light of

the fact that more was going on than just reporting back ideas. If we focus our attention more narrowly on the 'share back' activity, how does the team appear to generate ideas?

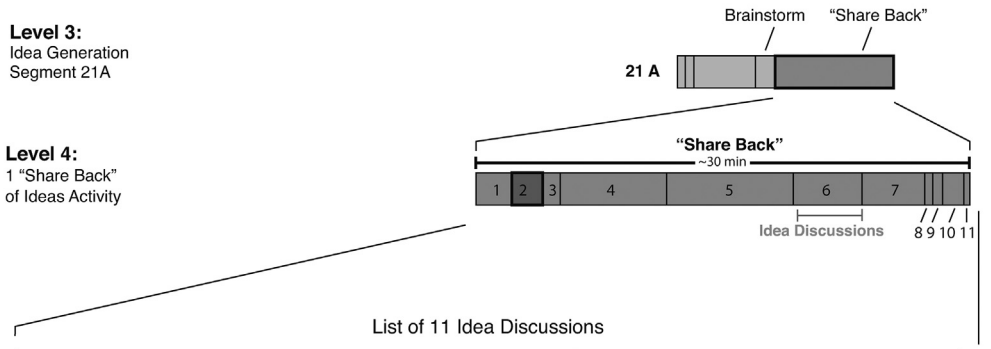
6.1 Level 4 methods

At this level, we focus attention on the 'share back' activity and narrow our scope of analysis to one of the three 'share back' activities identified in Level 3. The 30-minute 'share back' activity in segment 21A was chosen to be the scope of analysis. We identify the start of the 'share back' when Ewan asks 'should we start sharing a little bit, maybe other stuff will come up?' (v21, 199) and the end when Paul and Steve hand Ewan their remaining post-it notes and leave the room. Transcripts, video, and a photo of post-it notes arranged on the whiteboard were used to qualitatively analyze this 'share back'. One researcher focused on recreating the sequence with which ideas from the 'individual brainstorm' (i.e., ideas represented on post-it notes) were discussed by the group and placed on the whiteboard. Through multiple passes of the audio and transcript one researcher identified a sub-structure of idea discussions set apart by the topic of discussion and explicit transitions typically facilitated by Ewan (e.g., 'okay I'll start with an obvious one' (v21, 207) and 'eh did you have something else?' (v21, 400)). The creation of the visual depiction (i.e., the map of the post-it notes) involved three passes through the video in order to make note of when the post-it-note was written, what was written on it, who wrote it, and its movement in the room and on the board (if any). The sequence is depicted chronologically in Figure 7. Figure 7 also embeds the chronology with the imposition of numbers showing the sequence by which post-it notes were added to the whiteboard. The quality of this part of the analysis was supported via frequent debriefing sessions with the other researchers.

6.2 Level 4 findings

Here we begin to see structures of idea generation not only in time, but also the design team's use of space. Figure 7 provides the chronological depiction of the 'share back' of segment 21A and depiction of post-it note placement on the whiteboard.

After individually generating ideas, Paul and Steve 'share back' their ideas one at a time. Facilitated by Ewan, each person shares an idea and puts the post-it note on the whiteboard. If there are similar ideas, they are put on the whiteboard at that time. The ideas are then discussed together. Additional post-it notes are constructed during the 'share back' to capture new information and are added to the board. Sometimes members of the design team do this, other times the design team asks Paul or Steve to document new ideas or additional details. The 'share back' activity, in this instance, lasts about 30 min and covers 11 idea discussions summarized in Figure 7.



List of 11 Idea Discussions

Discussion	Author	Idea	Duration (m:ss)	Post-It from brainstorm	Post-It from share back
1	P	Cleaning the air around the car	2:20	P1	A1
2	P	Renting out parts of the car	1:56	P1	A2, E1
3	P	Famous table tennis player	1:09	P1	
4	S	Durability through time	6:41	S1, S2	A3, A4, E2
5	S	Local production	8:10	S3, S4	P2
6	S	Accessory subscription service	3:17	S5, P3	S6
7	S	Elder care	3:58	S7	
8	P	Volvo academy	0:32	P4	
9	P	Always get something extra	0:38	P5	
10	P	Teaming up with local brand	1:24	P6	
11	P	Comfy aaccessories	0:22	P6	

White Board Externalization of 11 Idea Discussions

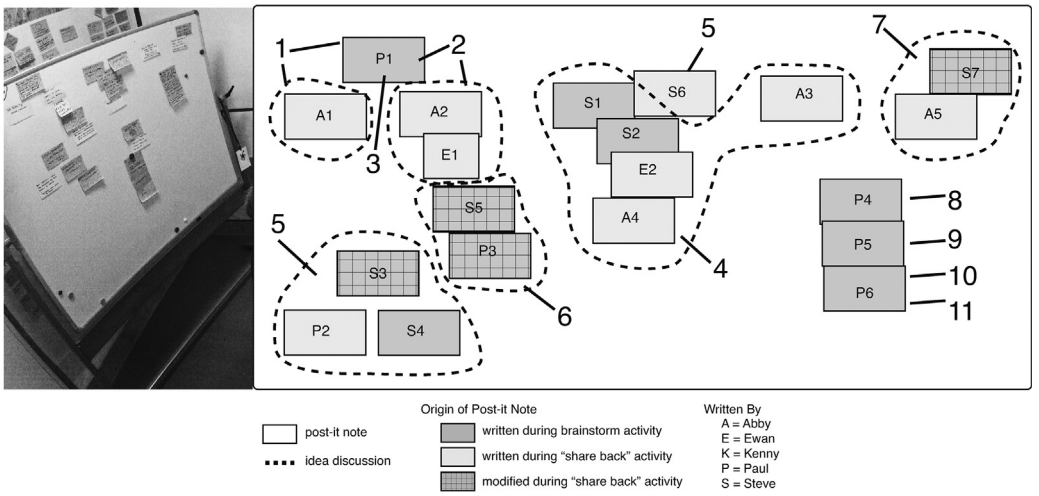


Figure 7 This figure provides a summary of the 11 idea discussions that occur in the 'share back' activity of the formal idea generation segment in video 21A. The table provides a list of the 11 idea discussions while the whiteboard map provides a visual representation of how the design team arranged sticky notes used during these 11 idea discussions on the whiteboard. The first column numbers the discussions chronologically. The second column shows who authored the idea. The third column summarizes what was written on the post-it note. The fourth column shows the duration (time) in minutes and seconds. The final two columns show which post-it notes are used during the 11 discussions and when the post-it was created (during the brainstorm or 'share back')

One of the most interesting features of the idea discussions in this segment is that they evolve and expand the idea into an exploration of the boundaries and possibilities of the idea, a phenomenon we name ***ideaspace*** and further explore in Level 5. Many of Paul and Steve's ideas are presented, not as one specific implementable solution, but as a constrained space of possible solutions. We see that the team discusses many options for ideas related to what is written on the post-it note. For example, during idea discussion 1, Paul lists a few different things his idea could be. He mentions a box 'that you slap on your car, or maybe its, you don't see the box maybe you see like a small post, or badge, or something' (v21, 215). There are even instances when the design team explicitly acknowledges that there are multiple paths or subcomponents of an idea. For example, during idea discussion 4, Ewan says, 'it has the two path thing, so you can recycle it or down cycle it into other parts, or is it the same object, … Yeah that's two interesting approaches' (v21, 350).

At the previous level we noted the use of visual externalization. Here we see in more detail that the team uses post-it notes as a means of capturing ideas. Post-it notes from the individual brainstorm activity are used to represent and display ideas generated by Paul and Steve. Each post-it note is intended to represent one idea that can then be displayed and moved around on the shared whiteboard to represent its relationship to other idea post-it notes. The importance of one note representing an idea is revealed when Paul has written multiple ideas on one post-it note. This prompts several discussions on post-it note logistics. Post-it notes are modified and new post-it notes are added to capture new thoughts as ideas are discussed.

7 *Level 5: the discussion of one idea within 'share back'*

Looking at the 30-min 'share back' activity in video 21 enabled us to notice the prolonged discussion around ideas documented on post-it notes. These discussions, while often seemingly disorganized and playful, are where we see the team collectively test and expand the possibilities of the ideas written on the post-it notes. This opportunity to notice the prolonged discussion gave rise to the final level of analysis presented in this paper, the ***ideaspace***. If we focus our attention more narrowly on the discussion of one idea that occurs during the 'share back', how does the team appear to generate ideas?

7.1 *Level 5 methods*

At this level, we focus attention on the idea discussion of a 'share back' and narrow our scope of analysis to idea discussion 2, one of the 11 idea discussions identified in Level 4. This two-minute conversation about Paul's idea to 'rent out parts of your car' (v21, 258) is defined to begin when Paul remarks 'and then I had a very vague, but – rent out 'parts' of your car' (v21, 258), and end when Paul moves onto his next idea stating, 'then I have the last thing on

this note' (v21, 304). This idea discussion was chosen because its duration was commensurate with that of other discussions during the 'share back'.

Like previous levels, we analyze Level 5 by mapping substructures of the idea discussion. Through multiple passes of the video and transcript one researcher mapped the substructure of the idea discussion into nine micro-episodes. These micro-episodes were constructed based on who was speaking, pauses in conversation, and shifts in the topic of conversation.

The size of the idea discussion — two minutes — allowed for a more in-depth analysis than previous levels. Accordingly, we analyzed the structure of the conversation through qualitative coding of the transcript using morphological analysis (Zwicky, 1969) as a lens for code development. Corrections were made to the transcript by one researcher and confirmed by a second researcher. Open coding of the transcript was used to define two levels of codes: *features* (different aspects of the idea) and *options* (choices within a feature). After the features were identified, the transcript was segmented and the presence or absence of these six features was coded. Coding was passed along to a second researcher for confirmation. This confirmation phase led to the identification of minor disagreements resolved by discussion. A transcript of this two-minute segment and the resulting coding can be found in Appendix 1.

7.2 Level 5 findings (ideaspace)

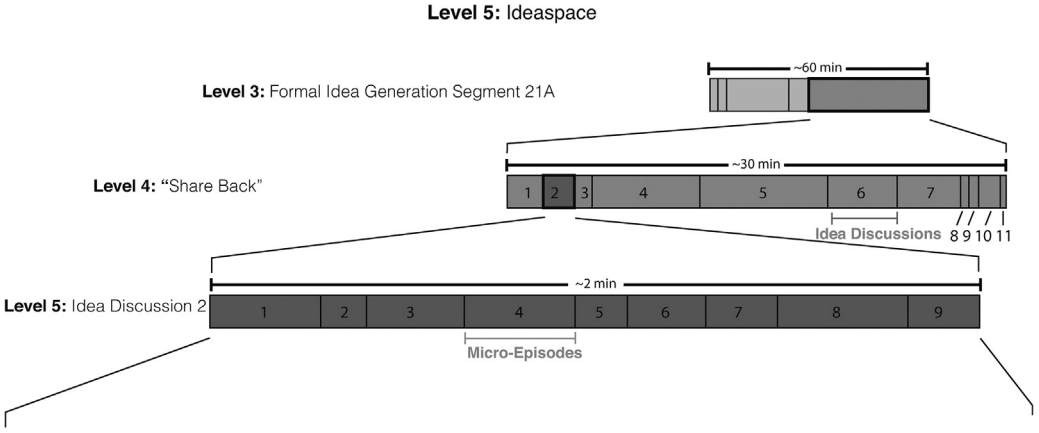
We begin with a description of the nine micro-episodes that make up the two-minute discussion of Paul's idea. More details can be found in Appendix 2. The discussion begins with Paul introducing what he has written out on his post-it note after which Ewan restates Paul's idea in his own words. Kenny then begins a string of joke-like scenarios of different parts of the car that can be rented out to different people. Paul follows this by providing more details about his idea, after which Ewan restates Paul's idea again. After this Steve, Ewan, and Paul mention other potential possibilities for the idea and Paul wonders if the idea meets the criterion of a car accessory. Kenny and Abby then give an example of service as an accessory and end the conversation by linking this service back to Paul's idea.

During the two-minute discussion, we see not just a recap of what is captured on the post-it note, 'rent out parts of your car. e.g. battery, trunk, …', but an expansion of possibilities for the idea captured on the post-it note. By the end of the discussion, we see that this one idea could be renting out the trunk, the front, the electricity, or the inside of the car as a local community resource for the car owner's neighborhood. We see that the trunk can be used for storage or delivery. We see that electricity could be a source of clean energy for the community to use rather than coal energy from a wall plug. Electricity could be used to charge phones, but not for hours—just enough to make a call. This

electricity could be accessed via an induction charger on the car or even come through the trunk.

By applying a morphological analysis approach to the conversation around one idea, an idea substructure of *features* and *options* was revealed. This substructure — the ***ideaspace*** — is detailed in Figure 8. Our analysis identified six main features — *who*, *what action*, *what object*, *why*, *when*, and *type of accessory* — and a number of different options for each feature. Appendix 2 shows the transcript of the discussion coded for each feature (i.e., if the talk captured in a row of the table has something to do with the feature represented in the column of the table, then the intersecting cell is shaded). Analysis across each column made it possible for us to see the range of options associated with a feature.

Figure 8 represents the collective set of features and options created by the group during the two-minute 'share back'. Because the figure shows the space of features and options associated with the idea, we refer to the table as an ideaspace.



Features	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7
WHO	others	not the world	your neighborhood	the mafia	the kindergarten	people cleaning cars	homeless guys
WHAT ACTION	rent out	use	not drive				
WHAT OBJECT	car	parts of car	trunk	electricity	front	inside	
WHY	storage	practice	sleep	clean energy	charging phone	delivery	community service
WHEN	while owner not using car	while others use parts of car	temporarily				
TYPE OF ACCESSORY	service						

Figure 8 Representation of the ideaspace as exemplified by a chart of the features and options proposed by the team during the second discussion around the idea 'renting out parts of your car'

This collective set of features is created by different individuals' contributions to the conversation. For example, Kenny's joke contribution 'So the mafia can rent out the trunk for the people they kill' can be seen in the shaded boxes of Figure 9 as a connection of five different features with specific options.

Through the close examination of the discussion of an idea, we notice several practices the design team employs to create the space of features and options, referred to as the ideaspace, that expands and enriches the idea as captured on the post-it note.

The ideaspace is constructed by contributions from team members of what Paul's idea could be by stitching together particular options with specific features. We refer to these contributions as configurations, borrowing the terminology of morphological analysis (Zwicky, 1969). Paul, the author of the idea, as well as Steve and the design team all contribute configurations over the duration of the discussion. Not all features are present in each configuration. An example configuration with the mafia joke was can be seen in Figure 9.

Individuals use a variety of different levels of detail when expanding the idea. Throughout the conversation there is gradual movement from a broad level of detail to a closer level of detail with recaps throughout that jump back up to broad levels of detail. This can be seen for example by tracing one feature of the ideaspace. The *who*, for example, begins as defined by Paul as 'others' (v21, 262). During the joke section Kenny, Ewan, Paul, and Steve define who these others might be in more specific detail 'the mafia', 'the kindergarten',

Level 5: Ideaspace

Features	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7
WHO	others	not the world	your neighborhood	the mafia	the kindergarten	people cleaning cars	homeless guys
WHAT ACTION	rent out	use	not drive				
WHAT OBJECT	car	parts of car	trunk	electricity	front	inside	
WHY	storage	practice	sleep	clean energy	charging phone	delivery	community service
WHEN	while owner not using car	while others use parts of car	temporarily				
TYPE OF ACCESSORY	service						

270 Kenny "So the mafia they can rent the trunk for the people they kill
272 Kenny just uh temporarily"

Figure 9 Ideaspace: Example of the features and options proposed by the team during the second discussion around the idea 'renting out parts of your car'. The joke suggesting that the mafia can temporarily rent out the trunk for the people they kill is visualized as a connection of different options for five different features

'people cleaning cars', 'and homeless people' (v21, 270, 273, 275, 276). Later, Ewan refocuses to an abstract level of detail 'not for the world, but for your neighborhood' (v21, 284).

Another action the group engages in is bounding the space by mentioning what the idea is not. This strategy is used several times in the discussion of this idea. For example, Paul frames the length of time someone can use the electricity from the car to charge their phone: 'yeah like maybe you can't like stand for an hour, but maybe you can get just a bit of juice so you can make a phone call' (v21, 289). In this example, Paul defines the length of time. There is not an exact number of seconds that one should necessarily charge a phone, but giving an example of what it is and what it is not gives the general range of acceptable durations that the electricity could be rented out.

Ewan also uses this technique when rearticulating *who* will be using the service. He explains 'it's not for the world necessarily, but it is for your neighborhood' (v21, 284). Rather than just mentioning exactly who the service is for, Ewan gives an example of who it is not for. Again this seems to serve the purpose of better defining the outside boundaries of the ideaspace.

8 Discussion

In this paper, we have presented a qualitative case study of a professional design team's engagement in idea generation with analyses at five timescales (levels). Examining structure at each level allowed us to see a variety of practices. We ground our discussion by beginning at Level 3, with an examination of three formal idea generation sessions. We start at this timescale as it aligns with much of the research on idea generation techniques. We then discuss what is revealed by looking across timescales, contextualizing the sessions by first zooming out to Level 1 (three months of the team's design process), then zooming in to Level 5 (examination of a two-minute discussion of one idea). Looking across these levels draws attention to promising avenues of future research and interesting potential opportunities for practice.

8.1 Idea generation at the timescale of design meetings

In their design meetings (Level 3) we find the team planning and executing their own version of familiar idea generation techniques. At least three times (sessions 3A, 21A, 21B), the team dedicates 30–60 min of meeting time to generating ideas using a particular structure of activities: 1) introduction of the topic, 2) timed individual brainstorm where ideas are captured on post-it notes, and 3) 'share back' where ideas are discussed and post-it notes representing these ideas are affinity diagramed on a whiteboard (Mizuno, 1988).

The team's technique resembles, but is not identical to any one named technique. Like the Nominal Group Technique (Van de Ven & Delbecq, 1974)

the team utilizes a combination of individual brainstorming as well as group sharing of ideas, but does not use voting to rank ideas or postponement of discussion until all ideas have been presented. We also see the team utilizing components or heuristics of familiar idea generation techniques (Daly et al., 2012; Hernandez et al., 2010; Smith, 1998). For example, the design team names explicit goals for the idea generation session, such as aiming for quantity over quality or using past experience as inspiration, and in the case of segments 21A and 21B several participants are brought in as 'outside sources' in order to generate fresh ideas (Osborn, 1953; Smith, 1998).

Given the varied landscape of idea generation techniques and consistency of the team's practice at this level, we are left to wonder, why this particular choice of techniques organized in this particular way? For some practices the design team provides an explanation (e.g., when bringing in individuals from outside the team to generate ideas). For other practices, the team enforces them without much explanation (e.g., the particular length of time for the brainstorm, the necessity of using post-it notes to externalize each idea, or particular heuristics like quantity over quality). What is clear, however, is that at this level of practice, the team is making the explicit choice to dedicate time to generating ideas and is vigilant about doing it in a particular structured way using rules, heuristics, and externalization tools.

8.2 *Zooming out: from meetings to months*

Zooming out to the timescale of months (Levels 1 and 2), we see the design team's formal idea generation in the context of three months of the team's design process: three formal idea generation sessions are captured in the dataset, occurring both before and after the co-creation workshop. Given that idea generation techniques are typically seen as being deployed in early phases of the design process, the repetition of the sessions across the timespan of three months raises a number of questions and possible implications for practice. This finding is resonant with more general findings that highlight the recurrence of design activities throughout a design process, such as findings from Atman et al. (2007) showing that information gathering appears throughout the process. What could be learned by more descriptive accounts of idea generation at the timescale of a teams' overall design process? Are there particular techniques suited to different points in the process? Can tools be developed to aid designers in applying idea generation techniques not just at the beginning but also strategically throughout their process?

Zooming out, we also notice the team enacting alternative means of generating ideas. We identify two structures of idea generation: formal idea generation and naturally occurring idea generation. The team chooses to deploy particular tools for idea generation at specific parts of their process, but they also engage in idea generation at other moments. In this study we did not examine

these instances in great detail, but the existence of such instances of idea generation push us to expand our research lens to focus on how designers structure idea generation when they are not explicitly setting aside time to generate ideas in a formal way.

8.3 Zooming in: from meeting to minutes

Zooming in to the timescale of minutes (Level 5), we see the design team's formal idea generation in a new light as we observe a phenomenon we term ***ideaspace***, enacted but not explicitly acknowledged by the design team. Our analysis of the team's brainstorming and 'share back' in video 21A surfaces interesting differences between the team's treatment of ideas at different timescales. At the level of formal idea generation in a meeting (Level 3), the team's practices give privilege to ideas as individually generated units to be created, captured on post-it notes, described by the originator, and organized on the whiteboard. However, what we see upon closer examination of the discussion of one of these ideas, is a collectively generated space made up of many idea fragments. While is it mentioned that 'maybe other stuff will come up' (v21, 199) during the 'share back,' the fragmented, collective, and dynamic nature of this other 'stuff' is not explicitly acknowledged by the team.

A detailed analysis of the two-minute discussion around Paul's idea 'renting out parts of your car' helped make clear the multitude of features and options considered and named during the discussion. The response to this somewhat vague 'idea' resembles the way the team might react to a mini design brief. Rather than passively listening as Paul explained his idea, individuals instead offered new content. The content, however, was not delivered in cohesive tidy units. It was instead fragmented (individuals only presented pieces of ideas), at various levels of detail, overlapping (individuals borrowed and added to what was being offered), and disorganized (in terms of the order in which the discussion progresses). Instead of one cohesive idea, as the post-it note representation might suggest, the discussion created a space full of possible fragments of ideas that together describe what 'renting out parts of the car' might mean.

Formal idea generation techniques aim to support designers' full exploration the design space. The noticing and bringing into focus of the idea discussions highlights an instance where the design team is exploring the design space, but at a granularity where they do not explicitly employ idea generation techniques. This pushes us to move beyond noticing toward further understanding the ideaspace in terms of its content, the practices by which teams construct it, and the context in which it occurs. We see the idea generation discussion as a site of design space exploration that deserves more attention as it has interesting implications for research and practice.

When we turn to the activities of the team at this level we ask – how are they creating the ideaspace? In contrast to the individual idea generation captured on post-it notes, the creation of the ideaspace through discussion is highly collaborative. In this analysis, we begin to identify means by which the team together creates the ideaspace. Future research could seek to further understand the collaborative nature of these practices by applying additional lenses to the ideaspace. The co-construction of the ideaspace resembles building coherence through co-inquiry as studied by Adams at a larger timescale in this same dataset (Adams, Aleong, Goldstein, & Solis, 2018). Future research could study idea discussions or idea generation on this timescale through the lens of co-inquiry. Another possible lens is linkography (Goldschmidt, 2014), where we could look at links between different design moves—small steps that transform or expand the ideaspace (Cai, Do, & Zimring, 2010; Goldschmidt & Tatsa, 2005), creating a timeline of linked moves. Our use of morphological analysis allows us to extend this process of tracing moves to examine how the designers are moving through a multi-dimensional ideaspace; rather than looking at moves over time, we look at moves as they occur during an idea generation discussion, going from one function or feature of the idea to another. A better understanding of how the team creates the ideaspace could help us develop tools to support this practice.

In our analysis we identify the team's dedication to the use of externalization tools at the timescale of the idea generation session, but not the idea discussion. Post-it notes are used by the team to capture the ideas of individuals during the individual brainstorm activity and some additional thoughts during the 'share back', but are not used to capture the level of detail or the structure ultimately revealed in the ideaspace. While this is not surprising, due to the timescale at which this is happening and the work it took us to bring the ideaspace into focus, we wonder if the team is even aware of the ideaspace and if their practices might in fact limit them from seeing the ideaspace. The post-it notes serve as a cognitive support for the team at the level of (what the team calls) ideas and promote clustering of those notes to explore categories of ideas (Dove et al., 2018). This practice, however, does not necessarily support exploration of the features and options that make up the ideaspace. With awareness, designers could leverage the ideaspace phenomenon by applying current techniques, such as morphological charts, during idea discussions that explore the possibilities of ideas captured on post-it notes. Future research could aid in the development of design tools that support design practices at the timescale of minutes, allowing the ideaspace to function visibly and as an area of deliberate exploration and discovery.

9 *Conclusions*

In this work, we make an empirical and methodological contribution via our multi-level analysis of idea generation in the wild. Through a qualitative analysis focusing on five timescales, we draw attention to structures, techniques, and tools

used for idea generation. We provide a conceptual contribution by introducing the notion of ***ideaspace***, and a methodological contribution by demonstrating how to analyze for and present an ideaspace. This conceptual and methodological contribution helped us address a key idea that frequently surfaced during the analyses, specifically the difficulty of pinning down ideas. Using a morphological chart to capture an ideaspace composed of features and options provided a productive approach for us. Looking ahead, such an approach might be useful for documenting idea discussions in other contexts and tracing idea generation through time. In fact, we productively explored this by using the notion of ideaspace to understand the informal idea generation activity in video 4B (v4B). We wonder what might happen if design teams, and even design students, were encouraged to leverage this approach more intentionally.

Appendix 1. Seven meeting segments where idea generation occurs

- Video 3: The design team, intern, and participant observer conduct formal idea generation related to choosing workshop participants. This is followed by a discussion about language and translation of the workshop where idea generation occurs as part of the discussion.
- Video 4: The design team and participant observer discuss the activities planned for the first day of the co-creation workshop. Idea generation occurs as part of the discussion.
- Video 5: The design team and participant observer discuss the activities planned for the second day of a co-creation workshop. Idea generation occurs as part of the discussion.
- Video 9: The design team and invited consultants discuss outcomes from the first day of the co-creation workshop and begin to adjust plans for the second day of the co-creation workshop. Idea generation occurs as part of their planning.
- Video 11: The design team and invited consultants discuss changes to the second day of the co-creation workshop. Idea generation occurs as part of their planning.
- Video 18: The design team and a consultant cluster insights from the co-creation workshop. Idea generation occurs as part of their thinking about how to incorporate the insights into products and services.
- Video 21: The design team members, plus two pairs of colleagues unfamiliar with the project, engage in formal idea generation.

Appendix 2. 'Rent out parts of your car,' Transcript coding

The discussion surrounding the 'rent out parts of your car' idea and our coding of the discussion to draw attention to the features of the ideaspace. In order to

save space, we have omitted turn-taking utterances that were exclusively filler words (e.g., um) or affirmative words (e.g., okay). Because these turns were not assigned codes in our coding scheme, the omission in the figure does not alter what is needed to understand our explanation of the results.

Level 5: Coded Transcript

Mirco-Episodes	Line #	Initial	Transcript Segments	Feature					
				WHO	ACTION	OBJECT	WHY	WHEN	TYPE OF ACCESSORY
1. Intro	258	P	and then I had a very vague, but - rent out "parts" of your car		■	■			
	260	P	so while you don't use it.					■	
			It can be electricity,			■			
			because you probably have an electric car or something.			■			
	262	P	It can be using the trunk space, whatever.		■	■	■		
			But basically letting others utilize your car while it's parked	■	■	■		■	
2. Recap	263	E	oh that's a good idea, so parts of your car			■			
	266	P	not using the car as such, but		■	■			
3. Jokes	270	K	so the mafia they can rent the trunk for the people they kill	■	■	■	■		
	272	K	just uh temporarily					■	
	273	E	while the kindergarten use the front	■	■	■		■	
	275	P	or people cleaning cars can practice on your car for example	■		■	■		
	276	S	homeless guys can sleep in the car	■		■	■		
4. More Details	278	P	It started more with the electricity thing,			■			
			like renting out the-		■				
			it's basically a battery, if it's on a electric car,			■			
			it's just standing there so-						
			from your car			■	■		
	280	K	and you could even combine it with a trunk			■			
	281	P	rather than coal energy from a wall plug				■		
5. Recap	282	E	community hub				■		■
	284	E	it's not for the world necessary,	■					
			but it is for your neighborhood	■					
6. More Details	285	S	so you have like a spot on your car where you can place your phone			■	■		
	287	S	where you could charge				■		
	288	E	like a yeah- like an induction- charger			■			
	289	P	yeah like maybe you can't like stand for an hour					■	
			but maybe you can get just a bit of juice so you can make a phone call				■	■	
7. Accessory?	291	P	I don't know it's an accessory,						■
			but eh: the [service part can be an accessory]						■
	292	E	[the service part of course]						■
8. Example of current service	293	A	and they have this eh: (..) delivery, what do they call - [in car delivery]			■	■		
	294	K	[in car delivery]				■		
	295	A	which is something that they are driving apparently						
	296	K	yeah they are driving and actually they said						
	297	P	roaming delivery or what?				■		
	298	K	yeah and they said that China is actually eh: requesting [that] service						■
	300	K	say it's very likely that I guess it will come there-						
9. Relate to current service	301	A	so it could be renting a trunk		■	■			
			just - (.) picking up stuff in any random trunk			■	■		
	302	K	yeah and electricity could come through			■			

Initial Key:
A = Abby, K = Kenny, E= Ewan, N= Nina, S= Steven, P = Paul

Appendix 3. 'Rent out parts of your car,' Micro-episodes

Here we describe the content of this section of segment #21 by briefly describing nine micro-episodes that occur within this particular two minutes of time.

- **Micro-episode 1:** (v21, 258–262) Paul begins with an introduction during which he introduces his idea generally – calling it out as 'vague' (v21, 258)- and gives two more specific possible implementations of the idea – renting out electricity and trunk space.
- **Micro-episode 2:** (v21, 263–269) Next, Ewan recaps or clarifies Paul's idea by restating it– 'oh that's a good idea, so parts of your car.' (v21, 263)
- **Micro-episode 3:** (v21, 270–277) Next, Kenny begins a string of jokes that fill in detailed alternative implementations of renting out different parts of cars to different audiences for different reasons. Abby does not participate; she is at the table documenting ideas on post-it notes.
- **Micro-episode 4:** (v21, 278–281) Following the joke, Paul refocuses the conversation, giving more detail about the renting out electricity implementation with a justification that the car can provide clean energy. During this explanation, Kenny interjects–combining the electricity and trunk concepts with, 'and you could even combine it with a trunk' (v21, 280).
- **Micro-episode 5:** (v21, 282–284) Ewan again recaps, bringing into focus the goal of the accessory as a 'community service' (v21, 282). Following this the group again enters a period of co-developing specifics of the idea.
- **Micro-episode 6:** (v21, 285–289) Steve, Ewan, and Paul continue to develop the electricity implementation by bringing in more details about how the power can be used to charge a phone with an induction charger, but just for a short period of time.
- **Micro-episode 7:** (v21, 291–292) Next Paul wonders if this idea meets the criteria of being an accessory, and is assured it's a service type of accessory.
- **Micro-episode 8** (v21, 293–300): Abby and Kenny follow up by mentioning one of the companies current services, 'in car delivery' (v21, 293), that China is requesting.
- **Micro-episode 9:** (v21, 301–302) The conversation ends with Abby and Kenny relating this current service back to Paul's idea, 'so it could be renting a trunk just … pick up stuff in any random trunk (v21, 301).

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