The Use of Scenarios in Developing Strategy: An Analysis of Conversation and Video Data

Meadows, M. & O'Brien, F.

The Use of Scenarios in Developing Strategy:
An Analysis of Conversation and Video Data

Abstract

Surveys of managers report that strategy tools such as scenarios are widely used in practice. However, such surveys of practice typically focus on reporting which tools are used, rather than exploring how they are actually used. This paper examines the use of scenarios as a tool to support strategy development. We highlight a number of roles (technical, analytical and social) that scenarios play in strategy exercises, and offer insights into the use of scenarios in practice, illustrating that they are used throughout the strategy development process rather than simply at the start. Our approach to data analysis, based on analyses of both audio and visual material from a strategy workshop, sheds light on enhanced approaches to coding both conversation and video data within strategy research.

1. Introduction

Surveys of senior managers report that strategy tools such as scenarios are widely used in practice (Rigby and Bilodeau, 2007; Stenfors et al., 2007), typically in strategy workshops within organisations. Moreover, in a study of how senior executives engage with methodologies and tools as they participate in strategic conversations, Jarratt and Stiles (2010) report that methods are adapted as they are contextualised in alternative practices. However, such surveys of managerial practices typically focus on reporting *which* tools are used rather than exploring *how* the tools are actually used in practice. This has led to calls for further research into the practice of the use of tools such as scenarios (Gunn and Williams, 2007). We also note recent calls for scenario planning research to re-engage with its roots in strategic management (Bowman and MacKay, 2020), and in particular with the strategy-as-practice agenda, as it is in "the micro-activities, the *doing,* of scenario planning" where elusive strategic concepts can be detected and analysed (p.4). To address this research agenda, we contend that strategic management scholars need enhanced approaches to the coding and further analysis of data arising from conversations and social interaction, in order to gain deeper insights into the strategic conversations taking place in settings such as scenario-based strategy workshops.

In this study, we analyse the use of a set of scenarios as a tool to support strategic conversations during strategy development in a workshop setting. Our analysis identifies that managers engage in a number of important phases of scenario use during strategy development. Moreover, we examine approaches to coding both conversation and visual data from the workshop, noting that while conversation analysis is the dominant approach to analysing 'talk', there is no widespread agreement about how a more holistic analysis of audio-visual data – including visual information, bodily conduct, etc. – should be carried out (e.g. Jones and LeBaron, 2002). Yet the approach adopted here, towards coding both audio and visual data, helps to reveal new insights into the use of scenarios in practice by managers.

The first aim of this study is to gain a more nuanced understanding of the ways in which strategy tools, such as scenarios, are being used in practice by managers engaged in strategy

development over a period of time; in particular we focus on how managers organise themselves to undertake a strategic conversation based on scenarios, when they have not been involved in the development of the scenarios in question. Our second aim is to explore whether new approaches to the coding of conversation and video data can shed light on both tool use and managerial practices. The paper begins (Section 2) with a literature review on scenario use (2.1). We then proceed by exploring literature concerning approaches to coding data on conversations and social interactions (2.2). Our next section (3) explains the research design. We introduce the case study on which the study is based – a large organisation in the transport sector – and our approach to data collection and methodology. Section 4 sets out our data analysis. We demonstrate our approach to conducting conversation analysis (focusing on coding the transcribed talk) and video analysis (coding the visual data and hence the additional activities of the participants during scenario use). In Section 5 we present our findings, based on an integration of both forms of analysis (audio and visual). We discuss our findings (Section 6), before moving on to present our conclusions (Section 7), the limitations of our study and a future research agenda that emerges around scenario use and the future coding and analysis of both audio and visual data.

2. Literature review

2.1 Scenario use

Scenario planning has a rich history which authors have captured in their reviews of the field (see for example Bradfield et al., 2005; Varum and Melo, 2010; Amer et al., 2013). Much of the extant scenario literature captures case studies involving scenario development (e.g. Cairns et al., 2013) or describes methodological enhancements to the phases of the scenario planning process (e.g. Wright and Cairns, 2011; Ramirez and Wilkinson, 2016), including extensions to include integration with other tools and fields (e.g. Analytic Hierarchy Process – Durbach, 2019; Design Thinking – Patel et al., 2018).

Previous research (O'Brien and Meadows, 2013) has noted that the scenario planning process can be organised into three phases: a preparatory phase where the purpose and focus of the exercise is agreed and driving forces are identified; a development phase involving the development of the scenario narratives themselves; and a use phase where the scenarios are used for their intended purpose - for example creating strategy or strategizing. It is this third phase, scenario use, which forms the subject of this research. O'Brien and Meadows (2013) organise the scenario use phase into three key activities in relation to supporting strategy development: understanding the implications of the scenarios, developing strategic options and evaluating strategic options.

A number of studies have explicitly investigated the area of scenario use, typically exploring the combining of scenarios with other tools in order to develop or evaluate strategic options. For example, Favato and Vecchiato (2017) consider how to combine scenarios and real options to explore potential strategic responses. Hussain et al. (2017) describe a method for using scenarios within a roadmapping exercise. Kunc and O'Brien (2017) outline an approach to using scenarios with resource mapping to rehearse and evaluate strategic

options. Finally, Schwarz et al. (2019) describe an approach combining scenario planning with wargaming to better understand future competitive dynamics.

The scenario literature rarely distinguishes between developers and users of scenarios; an implicit assumption is typically made that they are one and the same, when in practice this may not be the case. In fact, Wack (1985) argues that the key problem with scenario planning is that the interface between scenarios and decision makers is often ignored or neglected; in a similar vein, a number of authors argue that participation is a key characteristic of foresight exercises (Dufva and Ahlqvist, 2015), and that the intended users of scenarios should also be participants in the scenario exercise (Masini and Vasquez, 2000). Exploring who should be involved in the different phases of scenario development and use is important for both developers and users of scenarios; developers need to know how scenarios are being used, as this is likely to influence what is developed. The extant literature often describes the use of a facilitated scenario workshop for a focal organisation involving a team of individuals. For example, Bradfield et al. (2005) note that, within the Intuitive Logics school, the scenario team is usually made up of individuals who are internal to the focal organisation, with a facilitator guiding them through the process. For this reason, Bowman (2016) also describes scenario planning as an 'unmistakably social activity' (p.80), involving a range of actors and organisational roles. In practice, it is often not practicable to involve the same team of individuals in every phase or stage of the process, particularly if the lifespan of development and subsequent use spans months or even years. Some of the scenario literature explicitly addresses this issue, noting that different actors are involved in different phases. For example, Cairns et al. (2004) document the different types of actors involved in the preparatory and scenario development phases. In answer to the question 'who will create the scenarios?', Crawford (2019) lists a number of different practitioners: "facilitators, problem owners, experts, employees, stakeholders, community, and cross-populations" (p.11) – noting that team membership involved 'within' the scenario process may shift over time. She contrasts this internal involvement in the process with those decision makers 'outwith' (p17), and thus not involved with, the development process who nevertheless may form part of the scenario audience responsible for taking action. Lehr et al. (2017) explain that, whilst not ideal, in practice the people and teams involved in developing and using scenarios for strategizing are often different. Indeed, they note that "strategists often feel comfortable receiving the scenario overview and engaging in the strategic discussions" (p222). In contrast, Crawford (2019) notes that within the extant literature there are some who insist that participation in the development phase is necessary to the overall success of a scenario intervention. The argument for such a position is that it is the full involvement in a scenario development process that helps to make explicit, challenge and change the mental models of the participants. And yet, as noted above, this 'ideal' is not always what happens in practice. Does this mean that those who consume and use scenarios cannot achieve some or equal benefit compared to those who have been fully immersed within the process? Some studies have explored the impact of using scenarios on decision-making. For example, Johnson et al. (2016) research the impact that reading scenarios of future land use has on the willingness to participate in land use planning. However, such comparative analyses of the benefits to be accrued from different engagement patterns by teams, groups or individuals in the different phases of a scenario intervention have not been widely explored in the literature.   This research

contributes to this gap in knowledge by exploring how non-developing users engage with and use pre-prepared scenarios.

Methodologically-focused papers typically concentrate more on the development of tools rather than the nuances of tool use. Thus, there is a gap within the scenario literature exploring how the three phases (preparation, development and use) are conducted in practice. Gunn and Williams (2007) have noted that this issue is not restricted to scenario planning, and that such a gap is also present more widely within the literature concerning strategy tool use, i.e. there is a need for further research which explores the detail of how such tools are used in practice. This paper therefore addresses this gap by focusing on the activity of scenario use, since this activity is one where managers can be asked to consider and use a set of scenarios that they have not developed themselves.

2.2 Coding conversation and visual data in strategy research

Scholars of strategic management are regularly in need of a way of studying conversation, discourse and social interaction, whether they are interested in the detailed behaviours exhibited during a conversation between two individuals (e.g. Okamoto et al., 2002), the role of social media in building and deepening relationships between organisations and individuals (e.g. Waters and Jamal, 2011) or the role of conversations in inter-organisational collaborations (e.g. Hardy et al., 2005). On the one hand, data on conversations and social interactions may take the form of audio material, or a form of transcribed discourse. This may include interactions over social media, e.g. Waters and Jamal (2011) focus their analysis on Twitter data. On the other hand, the data may entail audio plus video material, allowing scholars to explore talk and action more broadly (e.g. Llewellyn, 2015; Llewellyn, 2011; Llewellyn and Burrow, 2008). The relationship between talk and action has also been discussed in the extant literature. For instance, Hardy et al. (2005) comment that in their study, "we focus on the way in which talk establishes the foundations for action in effective collaboration" (p. 72). They note "the role of conversations in generating discursive objects that represent resources for action" (p. 59), and in this study we explore the role of scenarios as such discursive objects which can support collaborations between managers during strategic conversations as they develop strategies for the future of their organisation.

Conversation Analysis (CA) is typically viewed as the dominant approach to the systematic study of social interaction. For Hutchby and Wooffitt (2008), CA is the study of recorded, naturally occurring "talk-in-interaction" (p.11). CA is generally viewed as a qualitative research method for analysing talk (e.g. Silverman, 2016). However, 'mixed methods' studies combining CA with quantitative methods have also been used since the 1980s "to test associations between interaction practices and sociodemographic variables, attitudinal variables, outcomes, and even factors such as the economy" (Stivers, 2015: 1). Such approaches to coding, allowing both quantitative and qualitative analyses, may be viewed as a promising line of research. There are at least two motivations for moving towards a formal coding approach (Stivers, 2015). First, the quantification of CA findings means that they become of interest for, and can be communicated to, a broader audience. Second, a more formal coding facilitates the testing of relationships between behaviours of interest and other sociodemographic variables (e.g., age, gender, etc.), variables that may be measured through surveys (e.g., attitudes, perceptions, beliefs) or outcomes (e.g. in medicine or education).

Gibson (2012) notes the complexity introduced in CA as we move from two participants, to three, to a larger group. He suggests there is an increase in "the risk of conversational breakdown when several speakers battle for the floor; and the likelihood that some people, at least, will find themselves on the conversational sidelines for extended periods" (p.23). In terms of quantitative analysis, when analysing talk between a group of 16 people (including U.S. President John F. Kennedy), Gibson plots frequency of speaking versus frequency of being addressed, along with probability of interrupting and response time, drawing out conclusions around the styles and the motivations of the speakers involved in conversations pertaining to the Cuban Missile Crisis of 1962. This suggests that new analytical approaches to gaining insight into social interaction are still emerging.

A growing body of work goes beyond the analysis of audio material to include visual content as well. Vom Lehn (2010, p.35) points out that unlike other forms of data, audio-visual recordings afford the researcher "the opportunity to share, present and discuss the evidence which supports observations and analysis, a facility that is rare within the social sciences". Strong interrelationships exist between action and context; CA has revealed the social and sequential organisation of talk (Garfinkel, 1967; Heritage, 1984; Sacks, 1992). Vom Lehn (2010) argues that the situated character of practical action (such as talk, visual and bodily conduct) can be elaborated by audio-visual data which help us to understand how participants produce and make sense of particular actions. However, Jones and LeBaron (2002) note that there is "not widespread agreement about how holistic analyses should be conducted" (p. 500). We note that very few authors address the question of how researchers should analyse periods of silence. Green (2004) notes that "a brief silence or conversation gap can occur for several reasons: the speaker has deliberately inserted it; it signifies the invitational space between turn taking; or the topic at hand has been exhausted" (p. 6). Yet, the literature offers no guidance on how video material can be used to supplement audio material on such occasions.

In summary, a review of the extant literature on coding conversation and visual data suggests that researchers in the field of strategic management are in need of further guidance, e.g. in terms of combining CA with more formal coding. The above review also suggests that new approaches to working with video material, perhaps to supplement audio material, will be valuable to successful strategic management research using these approaches. In this study, we focus on the coding of audio and visual data to gain insight into the use of a set of scenarios by a group of managers who had not developed the scenarios themselves. We analyse their interactions in order to understand how they organise themselves using the scenarios, and to shed light on the role that the scenarios play over the period of the workshop.

3.   Research design: Introduction to the case study and methods adopted

The research design involves a single in-depth case study (Yin, 2003). The client organisation for this study was a large company within the UK transport sector. The organisation was developing a strategic leadership development programme aimed at recently promoted middle managers within the organisation. The client believed that a scenario-based strategy

development exercise would be a powerful way to develop the strategic thinking skills of its future senior managers, as their careers progressed. The purpose of the exercise was to allow participants to practise developing strategies for their own organisation in response to alternative plausible futures, i.e. using a set of scenarios as a strategy tool to support the conversation. The exercise was run in small groups, and it culminated in a presentation by the participants to a number of their senior colleagues in the final session. The exercise was designed to provide the participants with two kinds of feedback – 'content' focused (i.e. concerning the outputs of the exercise, and the perceived value of the strategy recommendations presented in the final session) and 'process' focused (i.e. encouraging the participants to reflect on how they had worked together, and the steps that they had followed during their group work). The exercise was run by a team that consisted of one tutor chairing the presentations and panel feedback, two tutors briefing the exercise, observing the groups and providing 'process' focused feedback (e.g. planning tasks and time keeping) , and two senior executives from the organisation who provided 'content' focused feedback (e.g. how the suggested strategic options linked to current strategic priorities). The participants were provided with two scenario narratives, developed earlier by the team (tutors and senior executives). The two narratives set out plausible future external environments for the UK transport sector. The participants were provided with the two narratives in hard copy, and a brief overview is provided in Appendix 1. The scenarios included factors relating to government funding of the sector, stakeholder actions, the economy, technological developments, and consumer demand for travel. Participants were given a briefing by the two tutors which tasked them with preparing a board level presentation outlining the organisational strategic response to the scenarios. As part of the briefing they were reminded of familiar strategy tools (strategic vision, SWOT analysis) and introduced to new tools including the TOWS framework (Weihrich, 1993), a variant of SWOT analysis which enables participants to use the outputs of their SWOT analysis (usually captured as lists of strengths and weaknesses, opportunities and threats) as an input to the generation of ideas for a range of possible strategic options for the organisation. They were also introduced to concepts for evaluating strategy, including robustness, vision alignment and stakeholder reaction. The briefing was at a conceptual level – participants were not given prescriptive instructions on how to implement tools. The tutors also made it clear that these tools and concepts were suggestions, and that participants were free to draw on their own experience and knowledge of tools for supporting strategic development. The groups worked on their own without tutor facilitation; the tutors observed the groups and did not intervene in the groupwork. The chair and senior executives played no role in the groupwork.

The authors gathered video data of an exercise which took place over a 24-hour period (midday on Day One to midday on Day Two). The data presented and analysed here were gathered by placing two video cameras in the room where a group of five managers (here known as M1 - M5 to preserve anonymity) were working. The participants were fully informed about the aims of the study, and gave consent to the use of the data for research purposes. No additional incentives to participate were offered, as the participants were engaging in an exercise as required by their employer. Two cameras were used in order to capture the best possible audio and video coverage of the room, as the participants were free to move around while working – for example, from a seated position around a small table to a standing position at wall flipcharts. In addition, recordings were made of both the final presentations and the accompanying feedback session from the panel (described above). Appendix 2

provides a diagram of the room layout, illustrating the position of the tables, chairs, flipchart stand, wall space used to hang flipcharts and the cameras. Two digital cameras were used to record the workshop and activity and to determine playback timings. Both cameras were floor-mounted using tripod stands. The authors were aware that the presence of the cameras might lead some participants to alter their behaviour – and that such an 'observer effect' is difficult, if not impossible to measure (Sykes, 1978). However, we formed the impression – confirmed by conversations with the participants when the exercise was over – that they appeared to 'forget about' the presence of the cameras after a short period of time, and focused on completing the task as required.

After the workshop, all of the audio material was transcribed. The transcripts were checked against the video recordings, and the material from both sources (two video cameras, as described above) was used to supplement the transcripts where necessary (e.g. in instances where the conversation was unclear from a single source). Standard notation for transcription is provided in Appendix 3.

In the next section, we illustrate a number of approaches adopted for data analysis. First, we carried out CA on the transcribed audio material. The audio data were analysed by the researchers following the three levels of structure recommended by Gioia et al. (2013), as described further in the next section. Second, we reviewed the video material, and this required the development of an appropriate approach to coding the visual data. Vom Lehn notes that while in CA there is a long-standing convention for the transcription of talk, a similar convention is not available for the transcription of people's visual and material conduct, such as handling an object (2010). To address this point, vom Lehn adopts the approach of transcribing (at least) the onset and completion of the visual and material features of the participants' conduct with regard to the talk and/or silence or pauses (Goodwin, 1981; Heath, 1986). In our analysis, we followed this advice by transcribing selected episodes from the visual recording (alongside the audio), noting the activity undertaken by each participant. The video material was organised into five-second blocks. The activity was then coded in relation to each participant's visual and bodily conduct, differentiating between actions which result in engagement with other participants and actions which involve engagement with materials in use during the workshop. As the analysis proceeded, further distinctions were then made. For example, engagement with other participants was divided into looking at other participants (visual) and gesturing with the hands (bodily). Engagement with materials was divided into looking at materials (visual), pointing towards materials, creating materials, working with materials and moving materials (all bodily conduct). Our approach to coding of the visual material is illustrated in Appendix 4, and discussed further in the next section. Finally, we brought our analysis of audio and video material together as explained below, to form an integrated approach to addressing the research questions identified earlier.

4. Data analysis

Our approach to CA is illustrated in Figure 1 (below). It provides a summary of our first order codes and second order themes, which are then grouped into aggregate dimensions that provide insight into the practices in which the managers are engaging. An inductive approach to coding, category generation and selection was adopted, through repeated

scrutiny of the transcribed audio data. Both researchers coded the data independently and then compared findings and discussed and resolved any differences.

Figure 1: Coding scheme resulting from the conversation analysis
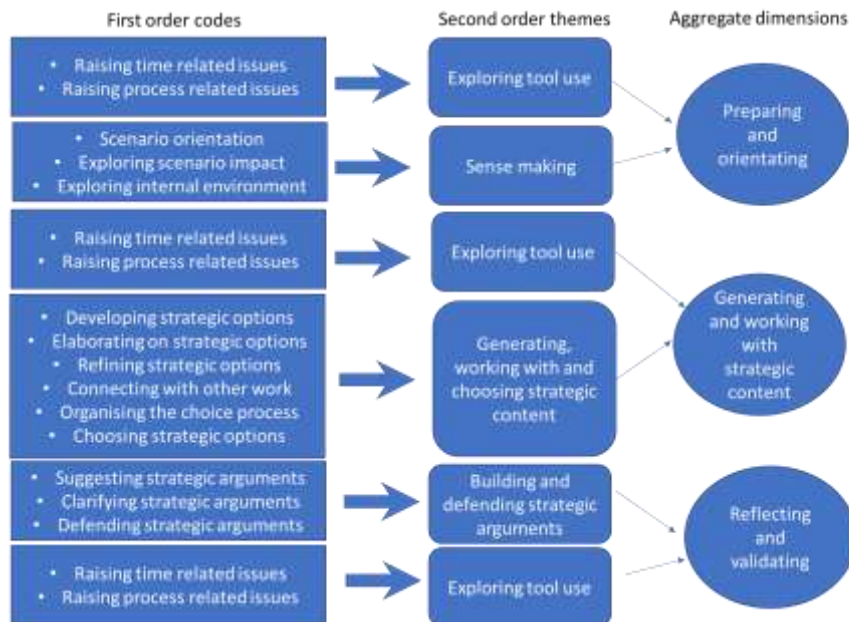
4.1 Analysis of three main phases of scenario use: evidence from audio data only

Tables 1-3 provide examples of quotes relating to each of the three aggregate dimensions, or phases of scenario use. Some key words and phrasing relating to the first order codes and second order themes are indicated in italics.

Table 1: Preparing and orientating – illustrative quotes

Illustrative quotes	First order codes	Second order themes
M4: I think we *need to spend 45 minutes*, at least for the strategic options. M3: And in normal circumstances, I would encourage lots of debate guys, but we *need to start getting stuff down.*	Raising time related issues	Exploring tool use
M1: Why don't we consider *the process we're going to deliver it in* and how to deliver that by 4pm. Okay well *the first step I suggest is* to… M2: *Consider scenario one* M1: Yeah M1: How are we going to capture, are we going to *capture those issues under the strength and weaknesses*? M1: Okay *we'll capture that. Shall we do the second scenario*? M3: Yeah okay.	Raising process related issues	
M5: I tell you what my thinking of both of those. *One is a growth scenario*, *one is a stagnation scenario*, but *in both cases* the government can't afford the costs. *In both cases*, we got issues with the unions, the only difference really is that one requires, one has a capacity problem and the other one doesn't. And there's a much higher political agenda *on the second one* for devolution and renationalisation or at least vertical and political integration. That's an agenda, its' not saying it's going to happen…	Scenario orientation	Sensemaking
M3: We've got *a threat in industrial relations* M1: That's an *external reason* M3: Not really, industrial relations is a threat M1: Yeah unions M4: It is but *I just don't understand what the consequence is. Where's the opportunity or the threat?* M2: What with the union? M1: It's the *impact on the staff* isn't it, low morale M3: Yeah, I'm okay with that M2: It could be seen as *an opportunity as well though*	Exploring scenario impact on organisation	

M3: I'm sorry it is a threat, *it's a threat to our ongoing business*. There's *a number of threats in there* in terms of restructuring. It means *we potentially might cease to exist*		
M5: *Strengths are a competent workforce* M4: Yeah, *performance, safety, competence* is high. *Good delivery on projects*, customer confidence increasing M3: *We have positive plans, that's a strength*, whether they're the right plans is…	Exploring the internal environment	

Table 2: Generating and working with strategic content – illustrative quotes

Illustrative quotes	First order codes	Second order themes
M5: The ability *to respond and to generate capacity*. That's important. And equally in both scenarios, if you've got retention problems with your staff, the you'll want to have some *inexpensive skilled alternatives*.	Developing strategic options	Generating, working with and choosing strategic content
M2: Is that a *strategic issue we have to face*? Is it something we have to go, oh actually, we have *to think of this potential and do something about it*, set ourselves on it?	Elaborating on strategic options	
M1: Okay so *let's go through*. Supplier market which we've done. Upward pay pressure from …. shortages. M2: *Culture of what? What is it about our culture that needs to be addressed*?	Refining strategic options	
M5: Then you'd want that *in either scenario*. M2: So we have to (.) something this way in order to set ourselves up for *either of those two scenarios*. M1: That *fragmentation one by government*, presumably our response to that is well *if we're actually focused on providing the right service and our customers are aligned in to improving the service, then they'll feel less a threat as well, whereas at the moment that would be an opportunity for them wouldn't it?*	Connecting with other work	
M4: *Do you want to go ticks* or do we want to go score out of ten? M2*: Ticks is easier from my perspective* M1: Ticks is perfect.	Organising the voting	
M3 Okay, so the green issues, what does that actually mean, *what are we doing, are we saying we…* M1 *We're trying to add*	Choosing options	

M5 I think *we're trying to exploit the, the political environment* if you like, like a desire to improve our green, so I, it's an exploitation I think, in that we M4 Yeah M5 *Enhance our reputation* and at the same time, potentially make some money out of it M4 There's no question *we've got a reputation for green* M5 Yeah.		
M4: Right, *how long have we got*? Just to ask the question. M2: *10 minutes so 11 o'clock we'll start this* and we'll start looking at them, yeah.	Raising time related issues	Exploring tool use
M2: I've been thinking about that because *they've asked us to come up with a strategy that asks us to take into account both scenarios*.	Raising process related issues	

Table 3: Reflecting and validating – illustrative quotes

Illustrative quotes	First order codes	Second order themes
M2: Can I *suggest you can build on green reputation* and you might have *three or four things, specific things you might want to do.*	Suggesting strategic arguments	Building and defending strategic arguments
M3: I'm *happy with explaining the fit*. And I think we need to *rewrite the stakeholder bit.*	Clarifying strategic arguments	
M5: What we are trying to do here is, we want to develop (1.0) culture. *There are two quick ways* of doing it. *The first is temporary*. High turnover of staff (1.0), can't do that. *The other way is to,* under the guise of up-skilling the (staff), you send them through, everyone through a training course. But actually …	Defending arguments	
M1: *Can we just do a time check. We've got ten minutes* to write this up and present this.	Raising time related issues	Exploring tool use

M3: In the remaining half an hour what I would like to do is *develop a bit of detail on this*, very quickly *see how it fits in with Part Two doomsday scenario* and the *rolling future scenario*, yeah to *see if it's the right thing to do*.	Raising process related issues	

Table 1 captures the early stage of the group's work. We hear the group reviewing the different tasks that make up the process they are about to follow, and discussing how long the various tasks might take. Table 1 also illustrates how the group engages with and makes sense of the scenarios. First, they go through a phase of orientating themselves with the detail of the scenarios, before moving on to consider the impact of the scenarios on their organisation, followed by reviewing the current organisational strengths and weaknesses.

Table 2 shows the group building on the work of the preparation phase – they move on to use their work and the materials generated, in order to develop a collection of strategic options which they then prioritise via a voting process. Again, there are a number of occasions when the group pauses to review how much time they have for the tasks they need to undertake. They also pause periodically to review the process of how they should go about their tasks.

Table 3 shows the group developing strategic arguments in support of particular strategic options that were generated earlier in their process. As before, they also pause to raise issues related to time availability and how to conduct the different steps in their process.

In terms of scenario use, it is noticeable that in each of the three tables above, the participants repeatedly return to and engage with the scenarios; they use the scenarios to support their activities at each point. It is also evident that the group returns to an exploration of tool use in each of the three phases, both checking the time they have available to undertake tasks in relation to their scheduled completion point and also in relation to the detail of the process they will follow. We will return to these issues of scenario use, timing and process via Table 4 and Figure 2 (Findings, below), having introduced the visual data into our analysis alongside the audio data.

4.2 Using visual data to analyse scenario use

Tables 1-3 clearly focus on the transcribed talk alone, without drawing upon the additional data provided by the visual material. In analysing the conversation, we can study what the participants are talking about, for example we can analyse their discussion as they explore the opportunities and threats contained in the scenarios. However, CA alone does not provide the researcher will a full picture of <u>how</u> the participants are engaging with the task at hand, with each other and with any materials that they generate.

Therefore, in order to gain a better understanding of the activities in the room, we also analysed three fragments of video by breaking down each fragment into 5-second blocks. This analysis allowed us to analyse both the talk and the main activities taking place, by observing each member of the team over each 5-second period. Appendix 4 presents the three fragments, and our detailed analysis of the visual material. The three fragments correspond to the three aggregate dimensions, or phases of activity, as identified above – 'preparing and orientating', 'generating and working with content' and 'reflecting and validating. This approach was adopted because, having identified the three aggregate dimensions that broadly represent how the group is organising its scenario-based activity, our analysis now seeks deeper insight into how the group is interacting using the scenarios.

In the first fragment, relating to the phase 'preparing and orientating', we see the group seated around a small table, discussing and clarifying the process steps that they are about to follow. One member of the group (M4) is setting out a process that he believes they should follow. He receives, and responds to, a question of clarification from one member of the group (M5) and a challenge or expression of concern from another (M3). Our analysis shows that the body language in this fragment is quite striking. (M4) appears to be keen to 'sell' his ideas to the other four group members. In his efforts to convince them that his process is the right one, he is leaning forward, gesturing with his hands, and looking at his colleagues, apparently seeking to make eye contact. Three of the four group members are sitting back in their chairs; they appear to be looking at M4 and listening to what he has to say. However, one group member (M1) appears to be quite dis-engaged from the group and its activities. He sits forward, with his elbow on the coffee table, and does not appear to be responding to the rest of the group.

In the second fragment, relating to the phase 'generating and working with content', all five participants are standing up, and some are moving around the space (in sharp contrast to the previous fragment). Their focus is generating and using materials, and they are looking at the flipcharts, with some instances of further writing of ideas on the flipcharts. The whole fragment is conducted in silence (apart from a single word, 'sorry', as one participant walks in front of another who is looking at a flipchart). The group are individually 'brainstorming' possible strategies for the organisation. One member of the group spends the entire fragment looking at the flipcharts. Two others are looking and writing, while the remaining two engage in looking, writing and moving materials. When analysing the visual material, it is striking that the participants are not engaging with each other. They do not appear to look at each other, or engage in pointing or other hand gestures seen in other fragments. Their different use of the space in the room is also noticeable in the video recording, with some individuals standing at the back of the room (some distance from the flipcharts) while others are standing immediately in front of the flipcharts.

In the third fragment, the group are 'validating and reflecting on content'. Again, all participants are in a standing position. The wall flipcharts contain a lot of materials – and two members of the group have just brought into the room some additional flipcharts containing material generated earlier, and put them on the floor. We see members of the group use their feet to move and point to these materials. From the audio, we know that at least one member (M3) is anxious about the available time, and emphasising that their schedule is tight. Alongside some conversation transcribed from the audio material, video material provides evidence of some interaction with whoever is speaking (e.g. with M5) – so that, alongside a lot of time spent looking at flipcharts by some group members, we also see some gesturing and pointing. The individual (M1) who appeared to be disengaged in the first fragment is the most active in this fragment, moving around the room and using his own materials (notes on paper) on a nearby coffee table. Other group members are mostly seen looking at the flipcharts; one moves in from the back of the room to a more forward position near the flipcharts, other also engage in some movement, gesturing/pointing or brief episodes of talk.

Our analysis of video data therefore surfaced a wealth of detail about the group's practices, as evidenced by Appendix 4 and the elaboration above. Next, we draw together the audio analysis (with led to the three aggregate dimensions or phases) and the video analysis (which has surfaced issues around bodily movements and silences, for example) to create an

integrated summary of key issues concerning scenario use over the course of the group exercise.

5. Findings

In this section we bring together the audio and video analyses, and highlight the findings that emerge.

5.1 Using audio and visual data together to explore scenario use

In Table 4 (below), we draw on both audio and visual data together. We present an overview of how time is spent within and between the three aggregate dimensions, or phases of the exercise. The findings summarised in Table 4 draw on a combination of audio and visual data to determine the time spent on each activity, and the overall duration of each of the three phases. A number of important insights emerge from this.

Table 4: Analysis of how time is spent within and across phases of the exercise

Aggregate Dimension	Activity (based on second order themes)	Duration hh:mm:ss	Periods of silence (included in duration)	Total duration of phase	Main behaviours observed	Dominant nature of scenario use
Preparing and orienting	Exploring tool use	00:36:19	0	01:42:49	Sitting and sharing ideas	Technical and Social
	Sensemaking	01:06:30	00:13:15			
Generating and working with strategic content	Exploring tool use	00:12:53	0	01:36:44	Standing and working with post-its and flipcharts	Analytical
	Generating, working with and choosing strategic content	01:23:51	00:07:55			
Reflecting and validating	Exploring tool use	00:07:42	0	01:01:36	Standing and reviewing flipcharts	Analytical
	Building and defending strategic arguments	00:53:54	00:09:43			

First, we can compare the amount of time that the group chose to spend in each of the three phases of the exercise. A large (although not entirely balanced) proportion of the time was spent in each phase, suggesting that all three phases are important when using scenarios for strategy development. However, we might also note that the longest period of time was spent in the first phase, 'preparing and orienting'. This suggests that, for a group of managers that are about to make use a set of scenarios that they have not developed themselves, it is

important not to underestimate the time required for this early phase of the exercise, where the group familiarises itself, and becomes comfortable, with the scenario narratives and the process they are about to follow, before moving on to the analytical activity that we might assume is at the heart of the exercise (the second phase). A similar, but slightly shorter, period of time was spent on the second phase, as the group generated and worked with strategic content. Finally, less time was spent on the third phase, when the group reflected and validated on their work. We might ask whether this was a suitable balance, or whether better time management might have allowed the group to spend more time on the final phase, in order to improve the quality of their final recommendations and presentation to senior colleagues.

With regard to the timing of the group's activities, it is also noted that, at some points in the exercise, the group spent some considerable periods of time in silence (also summarised in Table 4 above). Examples of such periods include when they were silently reading materials provided (such as scenario narratives), and when they allocated time to think and work alone – for example to generate or choose between ideas, before returning to the group to share their insights and engage with other group members. Such periods of silence were key moments for the authors to make use of the audio and visual data in parallel. Clearly, the transcripts of audio data alone offer no insight into what is happening in the room during periods of silence, and it was important for the authors to study the visual data to gain insight into what is taking place at those times.

Second, we note the group returns to an exploration of tool use throughout the exercise. More time is spent on exploring tool use during the first phase as, in this phase, the group is reviewing the whole process of strategy development using scenarios that they are going to be pursuing. In the second and third phases, they tend to return briefly to process issues, in order to clarify the detail of their use of tools – perhaps when there is uncertainty or disagreement among group members about the next steps.

To understand the repeated return to an exploration of tool use, the authors developed Figure 2, where we conduct a further exploration of the second phase of scenario use, 'Generating and working with strategic content', in order to analyse how time is divided between its two main activities – 'Exploring tool use' (on the bottom axis) and 'Generating/working with/ choosing between content' (on the top axis).

Figure 2: Illustrating the sequential transition between activities within the phase 'Generating and working with strategic content'.
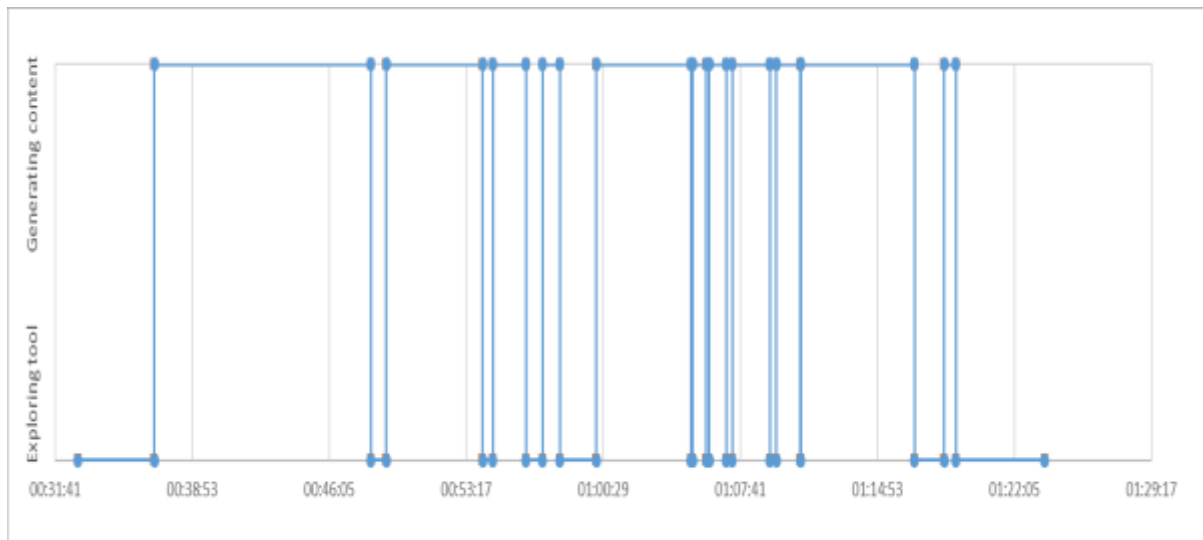
Figure 2 shows that the group oscillates between the activities of exploring tool use on the one hand, and generating/working with/choosing between strategic content on the other. Throughout the phase, most of the group's time is spent on generating/working with/choosing between strategic content, as shown in Table 4. However, the group repeatedly returns, usually briefly, to explore tool use, throughout the phase. As Figure 2 illustrates, at the start of the phase the group spends a short period of time agreeing the process steps that they plan to follow. Then, as the group moves forward through the agreed steps, they periodically pause to clarify details before returning to their main activities and undertaking relevant activities of generating and working with content. Many of the 'pauses' to explore tool use are very short, often less than a minute. This oscillating pattern, between the exploration of tool use and other activities, was observed during each of the three phases of the exercise.

Turning to a third issue emerging from our integrated analysis summarised in Table 4, using the visual data alongside the audio transcripts enabled the authors to summarise the main activities and behaviours taking place during the exercise. The penultimate column of Table 4 provides a high-level summary of the detail discussed in 4.2 (above), and presented in Appendix 4. Much of the first phase is spent with the group seated around a coffee table, apparently sharing insights and establishing common ground for the phases that follow. This reflects the idea that the second order theme 'sensemaking' is likely to be a thoughtful and discursive activity. In the second phase, we see that the group spends a lot of time standing in front of the wall flipcharts, writing on post-it notes and flipcharts, and placing and moving artefacts. Again, this fits well with the second order themes that comprise generating and working with strategic content. In the third phase, as the group seeks to build and defend its strategic arguments, group members are again mostly standing at the flipcharts, but now they are typically working with existing materials rather than writing or generating new materials.

Finally, in order to understand why the group was repeatedly returning to the scenarios, and how they were being used, the authors prepared an overview of the different roles played by the set of scenarios as the exercise unfolded. This is presented below (Table 5), and the timing of these roles in relation to the three phases is summarised in the final column of Table 4 (earlier).

Table 5: the key roles played by scenarios during the exercise

Role of scenarios	Example	Illustrative quotes
Technical: Relating to *process* of scenario use and strategic development, i.e. how to use the scenarios to support strategic development	Debating whether a factor generated should be defined as an opportunity or a threat; discussing the future timing of the scenarios in relation to the present day	"You were talking about green issues being both an opportunity and a threat" (M1).
		"Are we seeing this scenario as now or later? This is still looking to happen in (two years' time) though? We're doing this as at (two years' time)?" (M2)
		"When we were told that opportunities and threats are the future and strengths and weaknesses are the present, is the present generally (this year) or is the present (two years' time)?" (M5)
Analytical: Relating to *content* of scenario use and strategic development, i.e. exploring possible factors and strategies generated for the focal organisation	Working with scenarios, factors or strategic options generated; rehearsing strategic arguments; using analytical skills, logic and reasoning	"I tell you what my thinking of both of those. One is a growth scenario, one is a stagnation scenario, but in both cases the government can't afford the costs. In both cases, staff retention is a problem, in both cases, we've got issues with the unions, the only difference really is that … one has a capacity problem and the other one doesn't. And there's a much higher political agenda on the second one for devolution and renationalisation" (M5).
		"Regardless of whichever scenario, we have to cut costs, right" (M4).
		"I think with both of these scenarios, if we need to reduce our costs, if you can turn up the heat on what we have now and deliver more with what we've got, it means that we don't need to do anything else" (M5).
Social: Relating to *context* of scenario use, i.e. the effective functioning the group undertaking the exercise	Supporting the formation of a strong group; e.g. dealing with any tension or disagreement in the group; role of humour, role of silence	M2: It could be seen as an opportunity as well though. M3: I'm sorry, it is a threat, it's a threat to our ongoing business.
		M4: I think we should all just read (the scenario narratives) first. And … we can work out a lot of strengths and rigour because there's a lot in common. M2: Yeah, if we've not read it first, shall we just finish reading it, or has everyone finished reading it? M1: Yeah. M3: Yeah, no, I'm still keen on understanding what the key points are and making sure we've understood what … things are and then we can do the swap… M2: I'm quite happy to shut up until everybody has finished. M4: I'll literally be done in 30 seconds. M2: Okay. M3: And then we can work out what the… M2: Okay (followed by silence for 2 minutes 30 seconds).

		M1: It's not my presentation (name) I'm afraid. M4: (name) can you, can you, is there a good logic that shows why that would be a good approach, that's the key thing … M5: There's a couple of things, first one is… M3: Guys, guys, please, come on.

Our findings suggest that scenarios can play a **technical**, **analytical** and **social** role during the course of the exercise. First, the **technical** role of scenarios relates to the **process** of scenario use and strategic development, i.e. how the group members can use the scenarios to support strategic development. Second, the **analytical** role of scenarios relates to the **content** of scenario use and strategic development, such as exploring possible factors and strategies generated for the focal organisation. Finally, the **social** role of scenarios refers to the **context** of scenario use, such as the effective functioning the group undertaking the exercise. Table 5 presents quotes to illustrate each of the three roles. We suggest that the **technical** and **social** roles of the scenarios were particularly evident in the first phase, 'Preparing and Orienting' (although we find some evidence throughout the exercise). This is because, in the first phase, the group is forming (social role), and establishing a process to follow (technical role). The **analytical** role of the scenarios is particularly evident during the second and third phases of the exercise. In these phases, the scenarios are being used in conjunction with other strategy tools such as the TOWS matrix.

5.2 Summary of findings

To summarise, we began our data analysis by focusing on the audio data, adopting CA and identifying first order codes, second order themes and, finally, three aggregate dimensions that represent phases of scenario use during the exercise. Next, we turned to the video data and, by focusing on three fragments corresponding to the three phases, we conducted a detailed analysis of the group's activities and behaviours, including bodily movements and periods of silence that cannot be fully understood from audio transcripts alone. Finally, we integrated our analyses of audio and video data to gain additional insights into key issues emerging from the data. Our integrated approach analyses the duration of the phases, paying attention to periods of silence and to movement between second order themes such as the exploring tool use and working with/generating strategic content. Moreover, it enabled us to understand the dominant activities and behaviours that characterise each phase, and identify three different roles (technical, analytical and social) played by the set of scenarios as the exercise unfolded.

Our analysis clearly indicates that video data are valuable in tracking a number of aspects of the group's activities that would be difficult (or even impossible) with audio data alone. For instance, by describing the video data alongside the audio data, we can understand how each actor is engaging with the group activity (even when they are not speaking). We can explore how the actors are engaging with each other (e.g. looking at the speaker, or not), and what use they are making of materials such as flip-charts and post-it notes (looking at them, reading them, writing on them, etc.). We can observe how each actor is using their body and movement, for instance by gesturing while speaking to emphasise a point, or moving closer to or further away from other actors and materials. It suggests a possible lack of engagement in some instances. For example, we can analyse which actors have not spoken or moved

during a particular fragment. Importantly, it also allows us to analyse activity during periods of silence, as the group members work on chosen activities without engaging in conversation.

6 Discussion

Our study had two aims: to gain a more nuanced understanding of the ways in which scenarios are being used in practice to support strategy development, and to explore whether new approaches to the coding of conversation and video data can shed light on both the tool use and managerial practices.   These aims are connected, since it was in exploring new approaches to the coding of conversation and video data that a more nuanced understanding of scenario use was developed. Thus, in this section, we first summarise our analyses and coding approaches and then move on to consider the understanding of scenario use developed. We end this section with a discussion of the value of new approaches to analysis of audio and video data.

Our research involved a number of forms of analysis – one based on audio material alone, a second inspired primarily by the visual material, and an integrated approach that brings audio and visual material together. In discussing our findings, we need to distinguish between what we can learn from an analysis of talk alone, and what an analysis of visual data can tell us. While CA can be used to analyse talk, we argue that our additional analysis of visual data can provide us with a fuller picture and additional assistance in answering research questions around the use of scenarios by managers as they engage in a strategy development process.

From the CA, we developed a collection of 18 first order codes (see Figure 1). These codes offer a micro-level lens on how the workshop participants were working through the phases of a strategy process based on scenario use. The codes were then merged into a set of 6 second order themes, and finally three aggregate dimensions. We argue that the aggregate dimensions represent three broad phases or practices that the managers followed as they engaged in the strategy exercise (labelled as 'preparing and orientating', 'generating and working with content' and 'reflecting and validating'), while the 18 first order codes shed light on the more detailed steps in the process that make up the use of a set of scenarios in a strategic context. The collection of codes gives the researcher a broad overview of the whole dataset, as well as insight into the detailed process steps the participants followed. On the other hand, we contend that our analysis of visual material gives in-depth insight into key moments of activity. Moreover, video analysis allows the researcher to make connections between audio (talk) and visual data. It offers a more holistic approach, allowing the researcher to explore connections and interactions between speech and bodily movement, for example.

In this study, our first research question concerned how the managers made use of the scenarios in practice, as a tool to organise their strategic conversation over a period of time – in particular in a situation where the participants had not been involved in developing the scenarios. With regard to CA, our analysis of the transcribed audio demonstrates that the participants engaged with the scenarios throughout their strategy development process, i.e. through all three phases we highlight (aggregate dimensions shown in Figure 1 and Table 4). In the 'preparing and orientating' phase, such a finding is perhaps unsurprising, as we might

expect the group to begin their discussion by reviewing and making sense of the scenarios and their impact on the organisation. However, the analysis revealed that the participants repeatedly returned to the scenarios as they generated their strategic options, and again as they reflected on and validated their work.

The finding that scenario use occurs throughout the exercise, as evidenced by the audio analysis, is echoed in the video analysis. With regard to the three fragments where an analysis of visual material was undertaken, we found further strong evidence of scenario use at all three phases of the strategy process. In the first fragment, our data show the participants holding a collective discussion of, and working towards agreement on, a process based on the SWOT/TOWS framework, before they go on to follow that process. The visual material enriches the CA, in showing that the group are all seated around a table at this early stage in the process (there is no movement around the room), and it reveals the body language (such as gestures and eye contact) of the individual seeking to 'lead' the process and of the other participants who appear to have different levels of engagement with the conversation. These additional points are not evident from the talk alone. By using the two forms of analysis simultaneously, we have richer and more detailed evidence of the participants orientating themselves in the scenarios, making use of the opportunities and threats presented by the scenarios, and using the scenarios to drive the process that they are about to follow.

In the second fragment, the participants are engaging in individual brainstorming of strategies, based on the TOWS matrix. This is an example of the use of the scenarios to generate materials – in this case, ideas for strategies. The visual material is vital, in that this is a silent brainstorming session; there is no talk that can be used in CA. The visual material reveals the group's use of materials in relation to the scenarios (looking at, writing and moving materials), as well as their movement and their use of the space in the room – in sharp contrast to the first fragment, with talk but no movement around the space.

In the third fragment, the group is collectively preparing to draw out key recommendations, ready for their final presentation. The visual material again provides detailed and rich data on their use of materials (such as looking at flipcharts) as well as their movement around the room (as in the second fragment, the group are all standing). The audio material shows us that four of the five group members speak during this short fragment. However, the video material enriches the analysis, in showing us the interaction between the speakers and the other group members. They look at one other, as well as using hands and feet to point at and move materials. They are utilising the SWOT/TOWS framework to validate their recommendations, and to provide an 'audit trail' for their audience, i.e. they want to be able to explain and justify why they have chosen particular strategic options. The scenarios are therefore being used to validate the recommended strategies.

Our findings shed light on the role that the scenarios play, as the managers use them over a period of time. During the exercise studied, the scenarios have acted as discursive objects (e.g. Hardy et al., 2005) and, throughout the group conversation, they have played a number of roles which we have identified here. First, the scenarios are clearly playing an analytical role, in helping the group to generate strategic content, such as the identification of opportunities, threats, strategic options, etc. It is important to note that there is also evidence of the scenarios playing two more roles. Their second role is a technical one - supporting the

process of strategy development, e.g. when the participants are debating whether a factor they have generated should be defined as an opportunity or a threat. Their third is a social role, e.g. they provide a vehicle for the group to decide and agree how to work together. From a social and technical perspective, the scenarios assist the group in coming together, beginning a conversation and establishing norms for working together. We see instances of this in the first fragment, where M4 is proposing a process for the group to follow. He responds to a clarifying question from M5 and a challenge from M3. The first fragment shows the group working collectively to orientate themselves in the scenarios, and to agree a scenario-based process for the exercise, i.e. establishing *how* they will be using the scenarios. In the second and third fragments, the scenarios are being used in a more technical, or content-based manner. In the second fragment, a silent brainstorm, the participants work individually to generate strategy content (ideas for strategic options). In the third fragment, the group is again working collectively, this time to reflect on and validate the strategy recommendations that will form the basis of their final presentation. However, in the third fragment, there is also evidence of the role of scenarios in helping to work through points of disagreement (e.g. M3's challenges), suggesting that the more social aspects of scenario use are not confined to the early stages of the group work.

The detailed analyses discussed above serve to answer the call by Gunn and Williams (2007) to address the gap in knowledge about how strategy tools such as scenario planning are used in practice. We have noted earlier that the participants were not the developers of the scenarios and thus there was a change of personnel between their development and use, something which authors note is not ideal (Lehr et al., 2017; Crawford, 2019). Our analyses, however, demonstrate that despite this, the participants clearly engaged with and used the scenario narratives during the strategy development process, and kept returning to them throughout. Such a finding appears to conflict with opinions in the extant research related to continuity of involvement in scenario development and use, and thus further research is warranted. In addition, our study contrasts the roles that scenarios played within the strategy development process, identifying technical, analytical and social roles.

Our study also contributes to the literature on combining scenarios with other tools to develop strategy. In this study, the participants were introduced to strategy tools such as SWOT and TOWS, though a notable point is that the detail of how they used these tools was not prescribed in any detail by the organisers of the session. Thus our research sheds light on how the group operationalised the use of frameworks such as SWOT and TOWS through negotiating and designing their own process steps.

Our second research question concerned the value of new approaches to coding and analysing audio and video data. We show that our approach to data analysis, which led to an integrated analysis of visual material as well as audio material, leads to findings that CA alone cannot make, by shedding light on the practices that managers engage in, as well as adding granularity to our understanding of how scenarios are used. The visual material also offers insights into the social interactions and behaviours of individuals. For instance, in the first fragment, we see M4 attempting to lead the process, and we see that while some group members appear to be fully engaged, one appears to be quite dis-engaged from the group. We see M4 trying to 'sell' the process of scenario use that he is proposing. He tries to answer the questions and concerns of the group, he leans forward, makes hand gestures and seeks

eye contact. Three of the four participants sit back, looking at M4, appearing to listen to his arguments and allowing him to lead the group. In the second fragment, we see the group making significant use of materials. They are not engaging with each other, in fact some create some distance between themselves and the other participants. Their focus is clearly on looking at, writing on and moving materials. Importantly, in the second fragment, the visual material revealed the group's activities during periods of silence – a contribution that CA cannot make. Our analyses suggest that in contrast to the reasons suggested by Green (2004) for the occurrence of silence, participants in this study used periods of silence for personal thinking and working time prior to entering periods of group collaboration.

This study throws light on a number of methodological issues around the use of video data, such as the search for an appropriate approach to coding. We noted earlier that while in CA there is a long-standing convention for the transcription of talk, a similar convention is not available for the transcription of people's visual and material conduct (Vom Lehn, 2010). In this study, we analysed visual material for key episodes of scenario usage. We adopted the practice of separately transcribing the audio and visual recording, noting the activity undertaken by each participant. We organised the audio and visual recordings into five second blocks, and proceeded to code the group's activity, by noting each participant's visual and bodily conduct, differentiating between actions which result in engagement with other participants and actions which involve engagement with materials in use during the workshop. This form of analysis of visual material should be explored further, as this study indicates that it can lead to insights beyond the much more popular use of CA, focusing on talk alone.

In summary, our analyses (of both audio and visual material) tell us that scenarios are used throughout the strategy development process – in fact they can play an integral role in the process. Scenarios are not only used as preparation for strategy development activity. They are also used when generating and working with strategic content, and when validating and reflecting on such work. This is an important finding for scenario practitioners, as such practitioners need to understand how to help participants to fully integrate their use of scenarios into the different phases of the process. Facilitators should consider developing their skills to ensure that this happens in practice.

7 Conclusions, limitations and future research agenda

In this study, we have answered a call for further research into how strategy tools such as scenarios are used in practice. Our findings indicate that scenarios are an integral part of the strategy development process, being used throughout the process. The three practices or phases of scenario use identified here also illustrate that engagement with a tool is not only concerned with its use to generate content; the use of scenarios can play a 'social' and 'technical' role, as well as the more 'analytical' role that might usually be anticipated. Tool use, particularly amongst non-facilitated groups, can include episodes of clarification and negotiation about the process of using the tool within the group setting, along with episodes of reflection upon and validation of content previously generated. This allows individuals to build relationships within the group, negotiate their positions, and so forth. We therefore add to existing work (e.g. Bowman, 2016) exploring the use of scenarios as a social activity,

and extend our understanding of the different roles played by scenarios during a group-based strategy session.

Our contribution also extends to the use of video analysis in research to analyse scenario-based workshops. Not all tool use or artefact use can be captured via methods such as CA, and this is most obvious for the data corresponding to periods of silent activity. To understand the activity taking place in the scenario-based workshop under investigation, it is essential to go beyond audio data, and to make sense of video data too. For example, we know that audio data allow us to analyse talk - but what if there is no talk taking place? Our analysis of the video data enables us to gain additional knowledge of how the group was working together (including their physical activity), particularly at times of silence. Video data help us to track a number of aspects of group activity which would be difficult, or in some instances impossible, to analyse via audio data alone, such as the engagement of each actor with the activities underway, each actor's use of materials, each actor's use of body and movement in support of their speech acts (e.g. gesturing, or physically moving closer to or away from someone or something), and the interaction between the actors. However, capturing these insights in a robust fashion remains challenging, as for video analysis (unlike CA) no established notation exists for coding observations. We call for further work to explore the body language of workshop participants, in the context of a strategy-as-practice focus on the *doing* or micro-activities of strategic management.

We therefore argue that CA alone does not convey the full picture of what takes place in a complex setting such as a scenario-based strategy workshop. CA only captures the talk, and much detail of other activity in the room is therefore absent. An analysis of visual materials is needed to provide a more holistic account of how tools are used. We suggest that the use of two forms of analysis, audio and visual, in combination with each other, has the potential to offer the most powerful insights. Our study provides evidence of the rich data emerging via this approach, and the potential offered to researchers seeking to answer a range of questions around group-based strategy sessions. A limitation of our study, given its sharp focus on scenario use, is that we did not explore other avenues of interest to scholars around the communication and behaviour of individuals and groups. We therefore call for further work on conversation and social interaction in strategy sessions using audio and video data.

In the light of the above, we also note that a limitation of our study is that it is based on a single case study. More research is needed into how the two approaches, analysing audio and visual material, can be combined most effectively. Important questions arise about the suitability of the approach adopted here when working with larger groups, A further limitation of this study is that it is based on a single workshop which focused on scenarios as the principal strategy tool. We point to the need for further in-depth work to further understand the nature of the use of other strategy tools, in addition to scenarios, during group-based strategy sessions.

References

Amer, M., Daim, T.U. and Jetter, A., 2013. A review of scenario planning. <u>Futures</u>, 46, 23-40.

Bowman, G., 2016. The Practice of Scenario Planning: An Analysis of Inter- and Intra-organizational Strategizing. <u>British Journal of Management</u>, 27, 77-96.

Bradfield, R., Wright, G., Burt, G., Cairns, G., Van Der Heijden, K., 2005. The origins and evolution of scenario techniques in long range business planning. <u>Futures</u>, 37(8), 95-812.

Bowman, G., MacKay, R. B., 2020. Scenario planning as strategic activity: A practice-orientated approach. *Futures Foresight Sci*. 2020; e0032. <u>https://doi.org/10.1002/ffo2.32</u>

Cairns, G., Wright, G., Bradfield, R., Van Der Heijden, K., Burt, G., 2004. Exploring e-government futures through the application of scenario planning. <u>Technological Forecasting and Social Change</u>, 71(3), 217-238.

Cairns, G., Ahmed, I., Mullett, J., Wright, G., 2013. Scenario method and stakeholder engagement: critical reflections on a climate change scenarios case study. <u>Technological Forecasting and Social Change</u>, 80(1), 1-10.

Crawford, M.M., 2019. A comprehensive scenario intervention typology. <u>Technological Forecasting and Social Change</u>, 149 (119748).

Dufva, M. and Ahlqvist, T., 2015. Knowledge creation dynamics in foresight: A knowledge typology and exploratory method to analyse foresight workshops. <u>Technological Forecasting and Social Change</u>, *94*, 251-268.

Durbach, I., 2019. Scenario planning in the analytic hierarchy process. <u>Futures & Foresight Science</u>, p.e16. DOI: 10.1002/ffo2.16

Favato, G., Vecchiato, R., 2017. Embedding real options in scenario planning: A new methodological approach. <u>Technological Forecasting and Social Change</u>, 124, 135-149.

Garfinkel, H., 1967. <u>Studies in Ethnomethodology</u>. Oxford, Blackwell.

Gibson, D.R., 2012. <u>Talk at the Brink: Deliberation and decision during the Cuban Missile Crisis</u>. Princeton: Princeton University Press.

Gioia, D.A., Corley, K., Hamilton, A.L., 2013. Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology. <u>Organizational Research Methods</u>, 16(1), 15-31.

Goodwin, C., 1981. <u>Conversational Organisation: Interaction between Speakers and Hearers</u>. London, Academic Press.

Green, C., 2004. <u>Unspoken: A rhetoric of silence. Southern Illinois University.</u>

Gunn, R., Williams, W., 2007. Strategic tools: an empirical investigation into strategy in practice in the UK. <u>Strategic Change</u>, **16**(5): 201 - 216.

Hardy, C., Lawrence, T.B., Grant, D., 2005. Discourse and Collaboration: The role of conversations and collective identity. <u>Academy of Management Review,</u> **30**(1): 58-77.

Hart, R. P., 2000. <u>DICTION 5.0: The text-analysis program</u>. Thousand Oaks, CA: Sage

Heath, C., 1986. <u>Body Movement and Speech in Medical Interaction</u>. Cambridge: Cambridge University Press.

Heath, C., Hindmarsh, J., Luff, P., 2010. <u>Video in qualitative research</u>. London, Sage.

Heritage, J., 1984. <u>Garfinkel and Ethnomethodology</u>. Cambridge, Polity Press.

Hussain, M., Tapinos, E., Knight, L., 2017. Scenario-driven roadmapping for technology foresight. <u>Technological Forecasting and Social Change</u>, 124, 160-177.

Hutchby, I., Wooffitt, R., 2008. <u>Conversation Analysis</u> (2nd ed.) Cambridge, Polity Press.

Jarratt, D., Stiles, D., 2010. "How are Methodologies and Tools Framing Managers' Strategizing Practice in Competitive Strategy Development?" <u>British Journal of Management,</u> **21**(1): 28-43.

Johnson, M.L., Bell, K.P., Teisl, M.F., 2016. Does reading scenarios of future land use changes affect willingness to participate in land use planning? <u>Land Use Policy</u>, 57, 44-52.

Jones, S., LeBaron, C., 2002. Research on the relationship between verbal and non-verbal communication: Emerging integrations. <u>Journal of Communication,</u> 52, 499-521.

Kunc, M., O'Brien, F.A., 2017. Exploring the development of a methodology for scenario use: Combining scenario and resource mapping approaches. <u>Technological Forecasting and Social Change</u>, 124, 150-159.

Lehr, T., Lorenz, U., Willert, M., Rohrbeck, R., 2017. Scenario-based strategizing: Advancing the applicability in strategists' teams. <u>Technological Forecasting and Social Change</u>, 124, 214-224.

Llewellyn, N., 2015. Microstructures of economic action: talk, interaction and the bottom line. <u>The British Journal of Sociology,</u> **66**(3), 486-511.

Llewellyn, N., 2011. The gift in interaction: a study of 'picking up the bill'. <u>The British Journal of Sociology,</u> **62**(4), 718-738.

Llewellyn, N., Burrow,R., 2008. "Streetwise sales and the social order of city streets." <u>The British Journal of Sociology</u> **59**(3), 561-583.

Masini, E.B. and Vasquez, J.M., 2000. Scenarios as seen from a human and social perspective. <u>Technological Forecasting and Social Change,</u> 65(1), 49-66.

Mehu, M., Dunbar, R.I.M, 2008. Naturalistic observations of smiling and laughter in human group interactions. <u>Behaviour,</u> **145**(12), 1747–1780.

Okamoto, D.G., Slattery Rashotte, L., Smith-Lovin, L., 2002. Measuring interruption: Syntactic and contextual methods of coding conversation. *Social Psychology Quarterly,* **65**(1), 38-55.

O'Brien, F.A., Meadows, M., 2013. Scenario orientation and use to support strategy development. <u>Technological Forecasting and Social Change</u>, 80(4), 643-656.

Patel, A., Kalita, P.C., Asthana, S., 2018. Design for Future: Strategic Planning and Design Innovation Framework for Digital Organizations, DS 91: Proceedings of NordDesign 2018, Linköping, Sweden, 14th - 17th August 2018, https://www.designsociety.org/publication/40904/Design+for+Future%3A+Strategic +Management+and+Design+Innovation+Framework+for+Digital+Organizations, accessed 31 May 2019

Phillips, M. E., 1994. Industry mindsets: Exploring the cultures of two macro-organizational settings. <u>Organizational Science</u>, 5, 384-402.

Ramírez, R., Wilkinson, A., 2016<u>. Strategic reframing: The Oxford scenario planning approach</u>. Oxford University Press.

Rigby, D., Bilodeau, B., 2007. Bain's global 2007 management tools and trends survey. <u>Strategy & Leadership,</u> 35(5), 9-16.

Sacks, H., 1992. <u>Lectures on Conversation</u>. Oxford, Blackwell.

Schwarz, J.O., Ram, C., Rohrbeck, R., 2019. Combining scenario planning and business wargaming to better anticipate future competitive dynamics. <u>Futures</u>, *105*, 133-142.

Short, J.C., Palmer, T.B., 2008. The Application of DICTION to Content Analysis Research in Strategic Management. <u>Organizational Research Methods,</u> 11(4), 727-752.

Silverman, D., 2016. <u>Qualitative Research</u> (4th ed.) London, Sage Publishing.

Stenfors, S., Tanner, L., Syrjanen, M., Seppala, T., Haapalinna, I., 2007. Executive views concerning decision support tools. European Journal of Operational Research, 181(2), 929 - 938.

Stivers T., 2015. Coding Social Interaction: A Heretical Approach in Conversation Analysis? Research on Language and Social Interaction, 48(1), 1-19.

Sykes, R., 1978. Toward a Theory of Observer Effect in Systematic Field Observation. Human Organization, 37(2), 148-156.

Varum, C.A., Melo, C., 2010. Directions in scenario planning literature–A review of the past decades. Futures, 42(4), 355-369.

Vom Lehn, D., 2010. Examining "response": Video based studies in museums and galleries. International Journal of Culture, Tourism and Hospitality Research, 4(1), 33-43.

Wack, P., 1985. Scenarios: Shooting the rapids. Harvard Business Review, *Nov–Dec*, *6*, pp.139-150.

Waters, R.D., Jamal, J.Y., 2011. "Tweet, tweet, tweet: A content analysis of non-profit organizations' Twitter updates." Public Relations Review 37**,** 321-324.

Weber, R. P., 1990. Basic content analysis. Newbury Park, CA: Sage.

Weihrich, H., 1993. Daimler-Benz's move towards the next century with the TOWS Matrix. European Business Review, 93(1), 4 - 11.

Wright, G., Cairns, G., 2011. Scenario thinking: Practical approaches to the future. Springer.

Yin, R.K., 2003. Case Study Research: Design and Methods. Newbury Park, CA: Sage.

Zemel, A., Xhafa,F., Cakir, M., 2007. What's in the mix? Combining coding and conversation analysis to investigate chat-based problem solving. Learning and Instruction, **17,** 401-415.

Appendix 1: Overview of the two scenario narratives

Excerpt from Scenario 1

Don's mind wandered back to the previous meeting where they had received the report highlighting that the industry was currently faced with strongly rising demand for its services. A number of significant increases in the prices of fuel (petrol, diesel) …, combined with increasingly strong arguments from the environmental pressure groups and rising public awareness and concern around 'green issues' was encouraging the public to leave their cars at home whenever possible … the forthcoming Olympics is looking as if it will require further financial support from the government … A number of government initiatives to raise 'green' taxes, coupled with increasing oil and food prices, have led to transport use exceeding expectations. First, the road pricing scheme which was rolled out nationally late in year C has led to increasing demand for commuter journeys. Second, the Carbon Tax, introduced for internal flights, led the airlines to increase their prices. This very quickly led to a reduction in demand for flights and an increase in transport numbers particularly on longer journeys.

Excerpt from Scenario 2

Don's mind wandered back to the previous meeting where they had received the report highlighting that the industry was currently faced with stagnating demand for its services. A number of significant increases in the prices of fuel (petrol, diesel) and electricity, combined with a stagnating economy had dampened demand for travel by public transport … The government is continuing its squeeze on finances for a variety of reasons … [details removed for reasons of confidentiality] … A number of major projects in the industry have begun to hit serious difficulties … [details of projects confidential] … Pressure on staff is felt to be increasing. There is concern amongst some members of the Executive that this will cause industrial relations to further deteriorate, which in turn may well cause trade union militancy to be on the rise. This combination of failures has started to create a general sense, within Organization X, that the organisation has over-committed itself and cannot manage the business.

Appendix 2: Layout of the workshop room
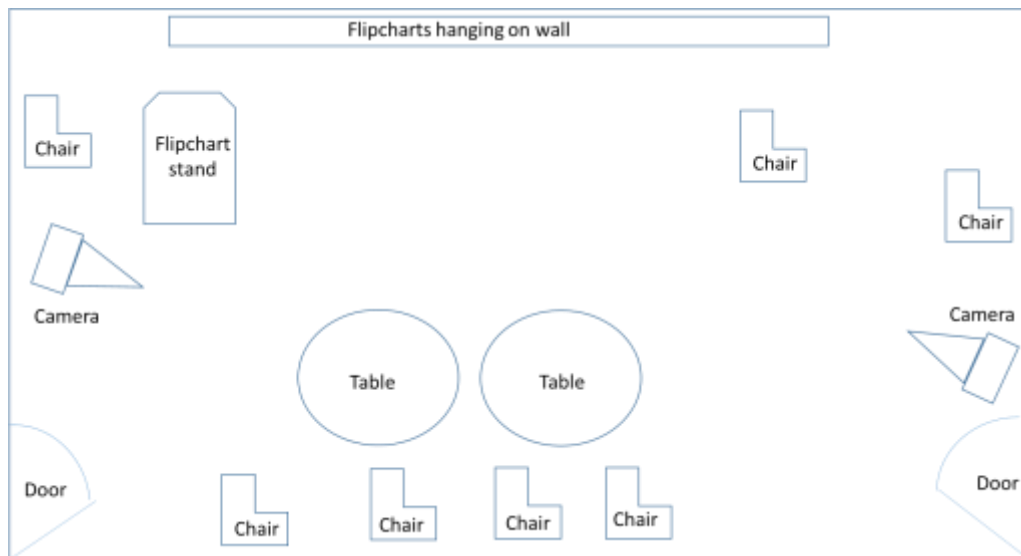
Appendix 3: Transcription Notations

SYMBOL	EXPLANATION	MEANING
(.)	Period in brackets	Micropause, less than 0.2 seconds
(0.7)	Number in brackets	Pause, measured in seconds
?	Question mark	Rising intonation
.	Period (or full-stop)	Fall in tone
,	Comma	Continuing intonation
!	Exclamation mark	Animated tone
-	Single dash	Used when an utterance is cut off
()	Single parentheses	Used when there is transcription doubt, i.e. the utterance is unclear
(())	Double parentheses	Used to enclose a description of something that is hard to transcribe, e.g. ((cough)) or ((nod))
=	Equals signs	Used when adjacent utterances are 'latched', i.e. there is no interval between them
Italics	Word in italics	Stressed word

Appendix 4: Video Analysis (3 Fragments)

Fragment 1
The five participants are labelled M1 – M5.

Time	Audio transcript	M1	M2	M3	M4	M5
0,00	M4: Then what you do is try to match those two together, so what is it about the Opportunities and Threats	Leaning forward in his chair, looking at M4, left elbow resting on coffee table, resting his chin on his left hand	Sitting back in his chair, looking at M4.	Sitting back in his chair, looking at M4. Touching his right cheek with his right hand.	Leaning forward in his chair. Looking toward M1 and M3. Gesturing with his hands.	Sitting back in his chair, looking at M4.
0,05	that relates to the Strengths and Weaknesses and by doing that you then start to understand	Sitting forward in his chair, looking at M4, left elbow resting on coffee table, resting his chin on his left hand	Sitting back in his chair, looking at M4.	Sitting back in his chair, looking at M4. Touching his right cheek with his right hand.	Leaning forward in his chair. Looking around all group members as he speaks. Gesturing with his hands.	Sitting back in his chair, looking at M4.
0,10	what your strategy should be. Basically what are the strategic issues to be faced?	Sitting forward in his chair, looking at M4, left elbow resting on coffee table, resting his chin on his left hand	Sitting back in his chair, looking at M4.	Sitting back in his chair, looking at M4. Touching his right cheek with his right hand.	Leaning forward in his chair. Looking around all group members as he speaks. Gesturing with his hands.	Sitting back in his chair, looking at M4.
0,15	M5: Are you linking the strengths and weaknesses	Sitting forward in his chair, looking down at the table, left elbow resting on coffee table,	Sitting back in his chair, looking at M5.	Sitting back in his chair, looking at M5. Touching his right cheek with his right hand.	Leaning forward in his chair, looking at M5.	Sitting back in his chair, looking at M4. Gesturing with his right hand.

		resting his chin on his left hand				
0,20	with the opportunities and threats presented in the scenarios? M4: Yeah, the ideal world scenarios is one where	Sitting forward in his chair, looking down at the table, left elbow resting on coffee table, resting his chin on his left hand	Sitting back in his chair, looking at M5.	Sitting back in his chair, looking at M5. Touching his right cheek with his right hand. Looks back at M4 when he speaks	Leaning forward in his chair, looking at M5.	Sitting back in his chair, looking at M4. Gesturing with his right hand. Stops gesturing and looks at M4 when he speaks.
0,25	you've got these huge opportunities that absolutely directly meet with your internal strengths	Sitting forward in his chair, looking down at the coffee table, left elbow resting on coffee table, resting his chin on his left hand	Sitting back in his chair, looking at M4.	Sitting back in his chair, looking at M4. Touching his right cheek with his right hand.	Leaning forward in his chair. Looking at M5 as he speaks. Gesturing with his hands.	Sitting back in his chair, looking at M4.
0,30	ie you've already set up…(0.5) your business is already set up to take advantage of the opportunity.	Sitting forward in his chair, looking down at the coffee table, left elbow resting on coffee table, resting his chin on his left hand	Sitting back in his chair, looking at M4.	Sitting back in his chair, looking at M4. Tapping his chin with his right hand.	Leaning forward in his chair. Looking at M5 as he speaks. Gesturing with his hands.	Sitting back in his chair, looking at M4.
0,35	The worst possible case is you've got all these threats that directly link with our weaknesses and none of our opportunities	Sitting forward in his chair, looking down at the coffee table, left elbow resting on coffee	Sitting back in his chair, looking at M4.	Sitting back in his chair, looking at M4. Stroking his chin with his right hand.	Leaning forward in his chair. Looking at M5 as he speaks. Gesturing with his hands.	Sitting back in his chair, looking at M4.

Time	Audio transcript	M1	M2	M3	M4	M5
				table, resting his chin on his left hand		
0,40	M3: That works for me..the only concern I have is when you said the vision to start,	Sitting forward in his chair, looking down at the coffee table, left elbow resting on coffee table, resting his chin on his left hand	Sitting back in his chair, looking at M3.	Sitting back in his chair, looking at M4. Gesturing with his right hand.	Leaning forward in his chair. Looking at M3 as he speaks.	Sitting back in his chair, looking at M3.
0,45	I would have thought it was best to work out what the vision should be at the end.	Sitting forward in his chair, looking down at the coffee table, left elbow resting on coffee table, resting his chin on his left hand	Sitting back in his chair, looking at M3.	Sitting back in his chair, looking at M4. Gesturing with his right hand.	Leaning forward in his chair. Looking at M3 as he speaks.	Sitting back in his chair, looking at M3.

Fragment 2

The five participants are labelled M1 – M5.

Time	Audio transcript	M1	M2	M3	M4	M5
0,00		Standing about 2 feet away from wall flipchart, looking at post-its on wall	Standing about 2 feet away from wall flipchart, writing on post-its and looking up at wall flipchart	Standing about 2 feet away from wall flipchart, looking at post-its on wall. Steps up to wall flipchart and places post it on it.	Standing at back of room, starts walking towards wall flipchart, looking at wall flipchart, post it in hand	Standing about 2 feet away from wall flipchart, looking at post-its on wall. Steps up to wall flipchart and places post it on it.

0,05		Steps to right, looking at wall flipchart	Steps up to wall flipchart and places post it on it. Steps back, looking at wall flipchart	Steps back, writing on post it	Looking at wall flipchart	Steps back from wall and walks to table at back of room
0,10		Looking at wall flipchart. Steps to left, past M4 and looks to another wall flipchart.	Steps up to wall flipchart and looks at it then moves post it note from one place to another on wall flipchart.	Stands still looking at and writing on post it	Looking at wall flipchart. Steps to right, past M1.	Bends down to table
0,15	M4: Sorry	Looking at wall flipchart	Steps back looking at wall flipchart. Steps up to wall flipchart and moves post it note from one place to another on wall flipchart.	Stands still looking at and writing on post it	Steps past M2 and goes up to wall flipchart and places post it on it. Steps back and walks towards back of room, glances over shoulder looking towards wall flipchart.	Writing on post it on table.
0,20		Steps to right and looks at post it held by M2. Writes on his own post-it note.	Steps back looking at wall flipchart.	Stands still looking at and writing on post it	Walking to back of room, pauses looking back to wall flipchart then turns and carries on walking to back of room.	Writing on post-it on table. Stands up and walks towards wall flipchart, looking at wall flipchart.

Time		Standing still and writing on post it.	Steps up to wall flipchart, looks at it and places post it on it.	Looks up at wall flipchart. Steps forward and places post-it on wall flipchart. Paper on wall gets dislodged from its magnetic stickers.	Turns towards wall flipchart and looks at wall flipchart.	Stops and looks at wall flipchart. Turns and walks back towards table.
0,25		Standing still and writing on post it.	Steps up to wall flipchart, looks at it and places post it on it.	Looks up at wall flipchart. Steps forward and places post-it on wall flipchart. Paper on wall gets dislodged from its magnetic stickers.	Turns towards wall flipchart and looks at wall flipchart.	Stops and looks at wall flipchart. Turns and walks back towards table.
0,30		Standing still and writing on post it.	Turns to back of room and takes a few steps in that direction. Stops and turns to look at wall flipchart.	Rearranges paper on wall that was dislodged when he added post-it. Steps back looking at wall flipchart.	Looking at wall flipchart	Stops in front of table – looking straight ahead (as if in thought).
0,35		Standing still and writing on post it.	Looking at wall flipchart, tapping post it note with pen	Standing still looking at wall flipchart. Writing on post it.	Looking at wall flipchart	Bends down and writes on post it on table.

Fragment 3
The five participants are labelled M1 – M5.

Time	Audio transcript	M1	M2	M3	M4	M5
0,00	M2: Do we all want to have a quick look at these and see if there's anything	Standing next to the floor flipchart, looking at wall flipchart	Standing at the back of the room. Walks towards floor flipchart, looking at them.	Standing at back of room, looking at floor flipchart	Standing at the back of the room	Standing next to floor flipchart, looking at floor flipchart

0,05,	that jumps out= M3: Cos we said that at quarter past we will start brainstorming=	Looking at wall flipchart	Walks towards camera, past floor flipcharts, turns and looks at floor flipchart	Walks towards floor flipchart gesturing with hands.	Standing at the back of the room	Looking at floor flipchart, moving one of them with his feet.
0,10	M1: Yep we're very close.	Looking at wall flipchart	Looking at floor flipchart	Looking at floor flipchart	Walks towards floor flipchart and looks at them.	Looking at floor flipchart
0,15	M1: You can see I've got M3: This looks quite clumsy to me if we can just do the opportunities and threats	Pointing to wall flipchart, talking with M3	Looking at floor flipchart. Both hands on his hips.	Walks over floor flipchart and joins M1 at the wall flipchart, pointing to it whilst he talks with M1	Looking at wall flipchart. Holding pen in his mouth with his right hand.	Looking at floor flipchart
0,20	M5: Now what I said yesterday about human capital , flexibility of the supply chain vs	Shifting wall flipchart around on the wall	Looking at floor flipchart, hands on his hips	Turns and faces group, looking at floor flipchart	Looking at floor flipchart, pen still in his mouth	Looks up towards M4, who is standing across the floor flipchart from him.
0,25	our in-house staff develops that theme,	Shifting wall flipchart around on the wall	Looking at floor flipchart, hands on his hips.	Looking at floor flipchart	Looking at floor flipchart, pen still in his mouth.	Points to flipchart on floor with his foot
0,30	erm, but I'm just wondering where it fitted into the strengths, weaknesses,	Walks across the floor flipchart towards camera at back of room	Steps to the left and looks up at wall flipchart to where M5 is pointing to	Looks up to where M5 is pointing at wall flipchart	Looks up to where M5 is pointing at wall flipchart	Turns and looks towards wall flipchart and points at one of the flipchart

	opportunities and threats.				
0,35	M3: That will come later, I think you're trying to jump the process,	Fiddling about with papers on the coffee table at the back of the room	Looking at wall flipchart	Looks up at M5	Looking at wall flipchart	Looks towards M3