Visual Interactions with Strategy Tools: Producing Strategic Knowledge in Workshops*

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Abstract

How do managers visually interact with strategy tools during workshops to produce knowledge about strategic issues? Building on the strategy-as-practice perspective and visual organization studies, we conceptualise workshops as arenas where visual interaction with strategy tools take place. Following this approach, we examine how a top management team creates a strategy tool during a workshop (using primarily video data). Our findings reveal three distinctive patterns of visual interactions: *shift*, *inertia*, and *assembly*. We also show how each of these patterns is enabled by the *affordances* of the tool used. Our findings contribute to theoretical elaborations of how actors visually interact with strategy tools, which offer extensions to strategy-as-practice and visual organization literatures.

Keywords: affordances; strategy tools; strategy workshops; strategy-as-practice; visual interactions.

Introduction

This study investigates how managers visually interact with strategy tools to produce knowledge about strategic issues in workshops. Such investigation is made possible through recent advancements in the strategy-as-practice perspective (Jarzabkowski, Balogun and Seidl, 2007; Vaara and Whittington, 2012; Whittington, 2006), and particularly the body of work focusing on how strategy tools are used by practitioners (Giraudeau, 2008; Kaplan, 2011; Molloy and Whittington, 2005). Consistent with these studies, we define strategy tools as the concepts, models and methods employed by managers during strategy making, for example the BCG matrix, Porter's five forces and SWOT (Jarrat and Stiles, 2010; Wright, Paroutis and Blettner, 2013). Recently, Jarzabkowski and Kaplan (2014) offer a conceptual framework for examining the ways that the *affordances* of strategy tools and the agency of strategy makers interact to shape how and when tools are selected and applied. Affordances are aspects of the materiality of the strategy tool that enable or constrain its use (Gibson, 1979; Hutchby, 2001). In other words, strategy tools have affordances that influence how managers will approach the discussions of strategic issues.

In this paper we show how the study of strategy tools in use and their affordances can benefit from a focus on the visual interactions of actors engaging with such tools. By 'visual interactions' here we refer to the processes of embodied interactions that can be captured in visual forms. In what follows we argue that there is limited theoretical elaboration and empirical understanding of the processes taking place when managers visually interact with strategy tools. To fill this gap, we examine the use of a strategy tool by a top management team involved in a workshop in a Small and Medium Enterprise (SME). Using multiple data sources (primarily video evidence), we analyse the way a strategy tool is created and used to produce knowledge about strategic issues by tracking the visual interactions between workshop participants and the tool. Through our examination, we provide a conceptual

elaboration of these interactions into three distinctive patterns (*shift*, *inertia* and *assembly*). We then link each pattern with particular *affordances* of the strategy tool. Accordingly, our study provides a novel contribution by examining the visual interactions associated with the use of strategy tools and how these produce knowledge about strategic issues within workshops.

In the sections below, we first discuss research on strategy tools and identify our research question. Our research methodology is explained next, followed by our findings. We conclude with a discussion of our contributions to the strategy-as-practice and visual organization literatures.

Visual Interactions in Strategy Tool Use

Strategy tools have been an integral part of the emergence and establishment of strategic management as a field. Yet it has been through the strategy-as-practice perspective, that scholars have been able to expand the agenda of strategy tools research (Vaara and Whittington, 2012) towards avenues such as the knowledge processes and cognitive aspects of strategy tools use (Jarzabkowski, Spee and Smets, 2013; Wright et al., 2013). Uncovering *how* aspects of strategy are enacted by organizational actors has been a key concern for strategy-as-practice scholars, for instance a particular stream of studies has examined the discursive constitution of strategy (Dameron and Torset, 2014; Paroutis and Heracleous, 2013). In such context, we are also beginning to understand how strategy practices are mediated by particular tools such as PowerPoint (Kaplan, 2011), plans (Giraudeau, 2008) and numbers (Denis, Langley and Rouleau, 2006). These strategy tools are also continuously changing and acquiring new properties during the strategy making process (Jarzabkowski et al., 2013a; Kaplan, 2011; Macintosh, Maclean and Seidl, 2010; Spee and Jarzabkowski, 2009). In this body of work, there is a gap however, around the visual processes through which strategy tools are created and used.

In comparison to the long tradition of studying the visual in the humanities and social sciences (for example, anthropology, sociology, art history, social semiotics, communication and media studies, and psychology), the study of the visual has been a relatively recent, yet growing, phenomenon in organization and management research (Warren, 2009). Such research is broadly defined as taking a variety of forms (pictures, graphs, film, web pages and architecture), involving several sub-disciplines (organization studies, marketing, accounting, human resources, tourism and IT), and entailing using either pre-existing visual material or researcher-generated visual data (Bell and Davison, 2013). In their review of visual organization studies, Meyer et al. (2013) identify five ideal-typical approaches to the study of visuals (archaeological, practice, strategic, dialogical and documenting). Consistent with our earlier discussion of strategy-as-practice, in the practice-oriented approach the visuals are "socially meaningful material objects that are created employed, and manipulated in organizational contexts, making them a constitutive part of social practices" (ibid. p. 505). Within this approach, the small number of empirical studies that have been conducted show that visuals can enable organizational actors to: challenge dominant organizational narratives (Bell, 2012), create conditions of sense-making (Heracleous and Jacobs, 2008), support the creation and sharing of strategic knowledge (Kaplan, 2011) and deal with the social and emotional aspects encountered in strategy making (Eppler and Platts, 2009). What is notable in these studies is that the embodied interactions (LeBaron, Glenn and Thompson, 2009) through which actors form and use tools, have properties in themselves, in other words they can be potentially captured in visual form and analysed, as video ethnographers have shown us (Feng and Maitlis, 2014; LeBaron, 2008; LeBaron and Streeck, 1997). Accordingly, we argue that strategy-as-practice studies have yet to combine an understanding of the strategy tool together with the visual interactions involved in creating it and using it, particularly in workshops (Macintosh et al., 2010).

Workshops have been the focus in the strategy-as-practice and cross-disciplinary problem-solving domains. Hodgkinson et al. (2006) utilise survey results to shed light into the ways workshops are related to the strategy development process, while Healey et al. (2013) use a survey instrument to examine the organizational, interpersonal and cognitive outcomes of workshops. Within the cross-disciplinary problem-solving domain, Colin Eden and his colleagues offer us micro-analysis of workshops focusing on group level interactions and negotiations (Ackermann and Eden, 2010, 2011b; Eden and Ackermann, 2010; Shaw, Ackermann and Eden, 2003). Despite their valuable insights, these studies are silent about the visual interactions in workshops.

We argue that an attention on visual interactions in workshops needs to focus on the *affordances* of the strategic tool in use (Hutchby, 2001; Norman, 1999; Leonardi, 2011). The term *affordance* was first used by ecological psychologist James Gibson (1979) following his research on visual perception. His theory of affordances aims to explain how individuals perceive the behavioural possibilities of a setting or object (so viewing a scene not as a pattern of shapes and colours but the potential it offers for action). Beyond the individual, the theory and notion of affordances is also taken to be relevant to social interactions (Gaver, 1996; Hutchby, 2001). Notably, Fayard and Weeks (2007) studied the affordances of informal interactions in three photocopier rooms. More recently, Jarzabkowski and Kaplan (2014) argue that the affordances of strategy tools and the agency of strategy makers are intimately interwoven during the selection, application and production of outcomes when using strategy tools. Despite such conceptual recognition of affordances and calls for more typologies of affordances (Leonardi and Barley, 2008), we lack theoretical elaboration and empirical evidence about the ways the affordances of strategy tools are enacted. Overall, our study tries to unpack two related, but under-researched, issues in the context of workshops: first, the way visual interactions between actors and the strategy tool take place, and second,

the role of the tool's affordances in this process. Accordingly, our overarching research question is: *How do actors visually interact with strategy tools to produce knowledge about strategic issues in workshops?*

Method

Research setting

We examined the use of a strategy tool at a Small and Medium Enterprise (SkillsCo[1]), during a workshop held as part of their strategic review process. The focus on a single workshop is appropriate as our interest is to closely examine group interactions in depth (cf. Tsoukas, 2009; Thomas, Sargent and Hardy, 2011). SkillsCo is helping disadvantaged individuals back into employment by offering skills training and placement services. In 2006, SkillsCo begun to explore ways to improve its efficiency, while their key strategic objective was to continue growing, but without the supporting functional areas growing at the same pace, so that gross profit margin could be improved. Key functional areas for which efficiency improvements could be achieved had been initially targeted, but the main concern was how these improvements could be brought about while ensuring that core operations would remain relatively unaffected. A consultancy team, that had been used before by SkillsCo, was brought in to help, and a strategic review project was launched. The first stage in the project involved a strategy workshop with SkillsCo's top management team comprised of seven members. The overall purpose of the workshop was to achieve a shared understanding of SkillsCo's strategic context before a detailed review of the company's supporting functional areas was undertaken. This would also ensure that the final choice of which efficient improvement programmes to implement was justifiable to SkillsCo stakeholders.

The particular tool used in the workshop was a strategy map created with *Group Explorer*[2], a computer system that combines problem-structuring techniques to support teams doing strategy work. The map was used by the team to capture the issues that SkillsCo was

facing at the time, and their perceived implications. One of the authors acted as the workshop facilitator, given his experience of using the tool, in exchange for access to research data from the workshop. This opportunistic approach to data collection (Reimer, 1977) allowed us to take maximum advantage of the rare opportunities to access data on the use of strategy tools in workshops. To construct the map, team members assembled in the workshop room and sat at small tables arranged in a horseshoe-shaped layout, with a console laptop for each table. The consoles were connected to a master laptop operated by the facilitator, who used it to control the consoles and assemble the team's contributions, and then displayed them on a large public screen located at the front of the workshop room. The screen was visible to all team members and provided a focal point around which team discussions about strategic issues took place. Team contributions were gathered both anonymously through the consoles and quickly displayed on the screen as they were entered, and via the facilitator. In addition, and assisted by the facilitator, team members' contributions were jointly structured by the team using the causal mapping technique (Ackermann and Eden, 2011a; Eden and Ackermann, 1998) to create the strategy map. A snapshot of the team in the workshop setting and an excerpt of the strategy map are shown in Figures 1 and 2 respectively below.

Insert Figures 1 and 2 about here

Data collection

Permission to video record the workshop was granted by SkillsCo, and the facilitator asked all team members to confirm their agreement to video and audio record the workshop before starting the session. The workshop was thus video and audio recorded, and fully transcribed. Increasingly scholars are suggesting video recording as an effective means to capture the micro-behaviours and interactions that are key to understand strategy practices (Johnson et al., 2007). In addition, *Group Explorer* allows the logging of time-stamped participants'

contributions when these are anonymously entered via the console laptops. Therefore, the set of workshop video recording, transcript, and contribution logs enabled us to reconstruct how the strategy map was built step-by-step by the participants during the workshop. The second author also kept a diary of key events before and after the workshop, in which he summarised conversations with members of the consulting team about the strategic review project, recorded his thoughts about SkillsCo, together with alternative designs for the workshop tasks, and other general observations. In addition, a research assistant made direct observational notes of what happened in the workshop, and conducted post-workshop interviews with each of the team members, asking them for their views on the workshop process and the strategy tool used. A total of seven interviews, each lasting about one hour in length, were recorded and transcribed. Our analysis focused on the visual interactions between actors during the workshop, but we also drew on the interview data and our research observations to supplement and triangulate our findings.

The workshop lasted six hours and was attended by all seven members of SkillsCo's top management team, including the CEO. One of the directors started the workshop by welcoming participants and signalling the start of the strategic review project. The facilitator then introduced the aims of the workshop and the strategy tool to be used to support the designed workshop tasks. Broadly, these comprised of three group activities: surfacing and clustering strategic issues, exploring relationships between strategic issues and their implied consequences, and exploring candidate areas of strategic priority. Although in principle these activities were designed to be undertaken linearly, cycling back between activities was permitted when required or needed during the workshop.

Data analysis

Our approach to data analysis applied principles of what is known as an iterative-inductive approach to theory-building (Orton, 1997; O'Reilly, 2005), in that we cycled back and forth

between theory and data. We conducted a close and repeated examination of the workshop transcript and video recording. Our analysis involved the following six steps:

(i) We identified strategic themes by using the designed workshop tasks and *Group Explorer* logs. A 'theme' comprised a set of team member contributions that represented a cluster of related material raised for discussion in the workshop. Internal linkages within cluster material had been explored during discussions, as well as external linkages across clusters. The latter was important because several strategic issues appeared under many cluster themes due to their interconnectedness. The beginning of a theme discussion was typically signalled by the facilitator or team member suggesting the existence of a potential cluster on the large screen; the end of a theme discussion was indicated by the facilitator or team deciding to move on, usually after either agreeing about the content and structure of the cluster (e.g. what issues were in or out of the cluster, what was their meaning, how these issues were linked to each other), or deciding that enough discussion about the theme had taken place. Four themes emerged during the workshop: 'Leadership', 'Government Regulation', 'Growth', and 'Efficiency'.

(ii) We examined each theme and identified 20 segments within which the meaning, interconnections and relative importance of particular strategic issues are discussed by team members. The start of a segment is defined by either the facilitator or the participants focusing on a particular issue within a theme, while the end of the segment is evident when the facilitator signals the end of the discussion about that particular issue. The 'Leadership' theme included ten interaction segments, 'Government Regulation' included one segment, 'Growth' included seven segments, and 'Efficiency' included two segments. Our preliminary analysis indicated variations in the way knowledge was co-produced within these segments.

Specifically, discussions within various segments resulted in either new knowledge being created, or knowledge being shared or reproduced.

(iii)   We coded each segment in three sub-steps: (a) we sensitized ourselves to knowledge production and meaning negotiation practices associated with tool-mediated interactions (e.g. Bechky, 2003; Carlile, 2002, 2004; Swan et al., 2007; Kaplan, 2011; Thomas et al., 2011; Tsoukas, 2009); (b) we coded each of the selected segments per turn of team member speech and tracked how the meaning and relative importance of strategic issues and their interconnections were formulated, structured, reiterated, challenged, and/or accepted through the team members' interactions with the strategy tool; (c) we captured the detailed aspects associated with these practices within each segment by using the video recordings. For each segment, we observed how the participants utilised the tool in their interactions and inductively developed a set of 4 categories based on whether interactions were *actor-triggered* (*actor-contained* and *actor-to-tool*) or *tool-triggered* (*tool-to-actor* and *tool-contained*). Table 1 provides definitions of these categories and examples from our dataset. One of the authors coded all interactions taking place within the segments using these categories. In doing so, he drew on the other authors' expertise and experience with the strategy tool, as well as their understanding of the team and SkillsCo to supplement the coding where appropriate. Doubts about assigning a code were resolved after detailed discussion amongst the authors. Thus, within each of the identified segments, we were able to track the unfolding actor- and tool-triggered interactions as strategic issues were being discussed by team members.

Insert Table 1 about here

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(iv) We counted the team members' visual interactions as coded using our inductively developed set of 4 coding categories across all segments. Then we compared and contrasted how the sequence of codes unfolded over time across all segments, in order to discern regularities in the temporal sequence of actor and tool-triggered interactions.

(v) Following Thomas et al. (2011), we then developed a conceptual elaboration of these regular temporal sequences into three distinctive patterns in the way knowledge was collectively created (*shift* pattern; 3 segments), reproduced (*inertia* pattern; 2 segments), or shared (*assembly* pattern; 15 segments).

(vi) Finally, we sought to explain the emergence of the patterns by drawing on the literature on affordances (e.g. Fayard and Weeks, 2007; Gibson, 1979; Hutchby, 2001; Norman, 1999; Leonardi, 2011) to consider the influence of the strategy tool on the team members' visual interactions. One of the authors watched the video several times and was able to identify participants orienting towards particular ways (affordances) to interact with the tool (for example, editing the strategy tool, relating concepts in the tool etc.). The rest of the authors also tracked these affordances and the small number of disagreements were discussed and resolved. We finally traced the affordances of the strategy tool that facilitated the emergence of actor- and tool-triggered interactions for each of the three knowledge production patterns, as we will discuss in the last section of the paper.

Findings

Below we provide a detailed description of each of the three patterns identified in the workshop, and include illustrative excerpts from the data. Additionally, the presence of the four categories of visual interactions across the three patterns is numerically analysed in

Table 2.

Shift

The shift pattern was characterised by visual interactions that enabled team members to articulate, test and change their minds about the meaning of strategic issues or their associations. Throughout their discussions, team members engaged on actor-triggered interactions to challenge each other openly, using tool-triggered interactions to support their individual formulations at particular points, which enabled them to gradually converge towards new understandings and knowledge.

The discussion segment about potential links between strategic issues related to *succession planning* and *ownership decisions* illustrates how this pattern developed. At the start of this segment, F (the workshop facilitator) is surveying the map and asks the team whether these clusters are related or not (lines 1-2, tool-triggered). Two contrasting perspectives emerge, advocated by G (line 8, tool-triggered; lines 14-15, actor-triggered) and D (lines 3-6, tool-triggered; line 4, actor-triggered; line 16, actor-triggered), while F begins to adapt the content of the map such that it represented the views and knowledge being exchanged initially (lines 11-12; lines 17-18, tool-triggered).

1	F:	Is that *[looks and points at map]* related to the previous one somehow? Or is it an
2		independent…?
3	D:	I think it will be impacted. The thing for me is what we want to do is develop our
4		people which I think that *[points at map]* said, but we know that the component is
5		something that needs to be developed in the next three to five years, it will be
6		magnified with succession.
7	B:	*[looks at D]* Yes.
8	G:	*[looks at model, then at D, then at model, then nods]*.
9	D:	*[looks at C, then points at map]* So, they…they're interrelated you could take them
10		as separate components but they are interrelated
11	F:	Sure, can we explore that a little bit… I mean can I bring that material into the
12		previous screen? Aahm just ah…

13	D:	*[looks at F, then nods]*
14	G:	*[looks at C, then at D]* They're not dependent are they? You'd have to do that one
15		*[points at map]* regardless *[looks at D]*.
16	D:	*[looks at G]* No, I I I I am not disagreeing.
17	F:	There you are *[locates and brings contributions into map display]*.How would they
18		fit into this?

D then continues developing his perspective about the links between the issues related to developing people, planning for succession, and ownership decisions (line 16, actor-triggered). This perspective is challenged by C, who surveys the different (number-tagged) issues displayed on the map (line 19-23, tool-triggered), and then evaluates the domain-specific knowledge and expertise collated and displayed in the map at that point (lines 27-30, tool-triggered; lines 32-43, actor- and tool- triggered). C is thus aligning with G, and the two contrasting perspectives are further explored through the tool, with F ensuring that the focus on the tool is sustained (line 49, tool-triggered).

19	C:	*[looks at map]* 39, 15 and 9 I say are different from that, *[points at map]* I can see
20		what 43…43 is different from 39, 15 and 9 *[looks at D then points at map]*. 39, 15
21		and 9 are do we sell, do we float, do we stay as we are, and that decision will be
22		made at that time. It is separate from developing people or whatever else *[looks at D*
23		*and uses hands to indicate separation]*.
24	D:	*[looks at C, then at map]* Do you not think that if 39 occurred that that would affect
25		that? So you wouldn't change your succession planning in the knowledge that in
26		twelve months time you sell it.
27	C:	*[looks at map]* But you would…The way we are structured at the moment if you
28		were to put a sell pack together, *[looks at D]* one of the strengths would be the
29		stability of the business, the growth of individuals within the business, that would be
30		*[extends hands and claps them once]* one of the facets to sell that...
31	D:	*[nods]* absolutely agree.
32	C:	..and that sits there *[looks at D while pointing at map]*. However, *[looks at D, puts*
33		*fists together]* new ownership of the business would determine its direction. No
34		matter what we as operating people thought *[looks at F]*, if I just bought your
35		business *[looks at D]* I am actually gonna tell you *[points at map]* and I'm gonna
36		give you the point of direction that you're gonna go in *[looks at D]*. And that's what
37		… the difference we have to get away from here is *[places hands together to his left]*
38		what can we impact upon and what is beyond our influence *[places hands together*
39		*to his right]*. And *[points at model, then looks at D]* when you get down to
40		ownership and desire of, whether it's *[looks at D, counting with fingers]* a market
41		that's directing you, whether it's a civil owner that's directing you or whatever, a
42		combination, I think that those three things [points at map] have to be dealt with.
43		Separately to…
44	F:	*[overlapping talk]* OK.
45	C:	*[points at map]*,,,you do that anyway.

46	D:	*[looks and points at map]* Well that's what I'm saying, I'm just…my view would be
47		that whatever happen to ownership or whatever direction you wish, could have an
48		impact on....
49	F:	*[interrupting]* any of these *[locates and highlights issues on map]*.

At one point D states that succession planning could not be undertaken properly until knowing first what happens to the business (lines 46-48, tool-triggered). Other team members join in the discussion and ask for further elaboration and clarification of both perspectives in terms of the existence and direction of links between the issues (lines 54-56, actor-triggered). This statement by D led to a debate in which team members' visual interactions enabled them to both articulate and negotiate their respective formulations (lines 50-52, actor-triggered; lines 57-59, actor- and tool- triggered).

50	C:	*[looks at D, than at F, then at D again]* I am not convinced by that! As a potential
51		owner of the business *[moves hands]* I'm not convinced by that *[places hands under*
52		*chin while looking at D]*.
53	D:	*[looks at C and shrugs shoulders]*
54	E:	*[looking at C, using his hands as if assembling something]* No, as a potential owner,
55		you would run it how you want to run it, you would structure it how you want to
56		structure it.
57	C:	*[looks at E]* What you're trying to do...*[points at map, makes a circle with finger,*
58		*then looks at D again]* you're trying to structure your business currently to make the
59		most attractive offer to whatever way you wanna go.

At this juncture B engages in an tool-triggered visual interaction that marks the beginning of a gradual turn towards a new understanding and collective agreement. While C is talking (lines 61-66, actor- and tool- triggered), B is looking at his computer monitor (which contains the list of his contributions to the map) (lines 60; 67, tool-triggered) and then tries to articulate a middle position between those advocated by D and C (lines 69-72, actor-triggered). Interestingly, the ensuing discussion results in B changing his mind (line 78, actor-triggered).

60	B:	*[looks at computer monitor]*.
61	C:	So you want *[enumerates with fingers]* highly motivated, well developed,
62		management team and workforce who are producing efficient results and that's what
63		your sales pack is *[extends hands and claps]*…bang!. So all of that there *[points at*
64		*map, then at E]* you should developing, at the point of *[uses hands to indicate*

65		*separate options]* time of float, sell or whatever, you are then governed by a
66		different set of rules…
67	B:	*[stops looking at computer monitor, then looks at map].*
68	C:	…the rules of the people or the person that then owns you.
69	B:	*[looks at D and E]* I think there's no denial that succession planning is impacting
70		upon the fact that if you've got new owners, it's supposed that succession planning
71		is going to be different, but *[uses hands]*, so therefore there's two stages, the
72		succession planning in the current …
73	C:	*[nods]* hmm…
74	B:	…state, but we can't really predict what succession planning in the [unintelligible]
75		will be, can we?
76	C:	*[looks at D]* It would still exist.
77	D:	*[looks at B, points at map]* And that is the point. There is a link.
78	B:	*[looks at D]* Yeah, there is a link *[looks at map].*

In the ensuing discussion, and whilst C continues to elaborate on his view about the

contested link (lines 84-86, actor-triggered), D engages in a tool-triggered visual interaction

that surfaces the conditions upon which this link may exist (lines 87-88).

79	D:	*[looks at map]*
80	C:	…so *[points at map]* dependent upon the decision *[uses hands]* whether it's float,
81		whether it's sale, whether it is management buyout, will depend on *[points at map]*
82		how it can impact, it can impact in different ways *[looks at F].*
83	F:	*[looks at C]* Yes.
84	C:	*[looks at team, counts using fingers]* One could be getting rid of you, one could be
85		developing you further, and one could be taking over, *[looks at D]* management
86		buyout, you become the shareholders *[opens hands].*
87	D:	So those things *[points at map, then looks at C]* becoming in your way will be
88		impacted on that.
89	C:	*[looks at map, then at D]* In those ways *[raises hands]*, in those three ways,
90		dependent on the decision.

As a result, a shift away from the original contrasting positions is observed (lines 89-

90, tool-triggered interaction), and a new collective understanding and knowledge begins to

emerge. When this happens (lines 95-96, tool-triggered; line 98, actor-triggered), the map is

used by F to summarise and highlight the achievement of a negotiated agreement (lines 91-

94, tool-triggered; 97, actor-triggered).

91	F:	*[looks at map]* Yes, so maybe the issue is the nature between, *[looks at D]* I mean
92		the impact between these two 'reds' *[locates and points at the two issues on map –*
93		*now coloured in red]* will depend whether it is a buyout or *[looks at C]* it is a
94		management sell-out decision.
95	D:	*[points and looks at map]* It will change the shape of the things that you do within
96		those comparisons.

| 97 | F: | *[looks at D and nods]* |
| 98 | C: | *[looks at D, then at map]* that's the link. |

Therefore, the preceding discussion regarding the existence of a link between issues concerning *succession planning* and *ownership decisions* issues involved two contrasting positions, which were both challenged in an open discussion. These initial positions were made explicit through actor-triggered visual interactions, and gradually abandoned by those advocating them through tool-triggered interactions at particular points of the discussion (lines 79-90). As a result, a new structure of domain-relevant knowledge emerged and was represented by the agreed link in the map (lines 91-98). These kinds of interactions were distinctive from the behaviours observed in the next pattern.

Inertia

In this pattern, team members engaged mostly in tool-triggered interactions to render and control particular interpretations and knowledge about strategic issues or their relationships. The tool's content is subject to debate but alternative tool configurations representing contrasting perspectives are not fully explored during team discussions, with only one knowledge perspective becoming translated into the tool. To illustrate this pattern we draw on a discussion segment in which team members contest the relationships and meaning of strategic issues concerning *succession planning* and the *development of managers to meet challenges*. For this particular segment, team members had requested the facilitator to discard (or combine) certain issues displayed on the map because they were deemed similar to other issues on the map. In the subsequent exchange, B argues that the strategic issue of *succession planning* (number tag 3) can be addressed by *managing succession within the senior management team* (number tag 29), and *developing managers and directors to meet challenges* (number tag 23). As F enters and displays the proposed links on the map (lines 2-3, tool-triggered), C contests their stated direction (e.g. lines 9-14 and 31-33, tool-triggered;

line 17, actor-triggered).

1	B	*[looks at map]* It's the 'development' that leads into the 'succession' I would say.
2	F:	*[looks at map]* That one…with that one *[locates, highlights and draws tentative link*
3		*between issues on map, then turns to B]* like that?
4	B	Yeah.
5	F:	*[looks at map and leaves link as permanent]* ok that's fine…*[looks at map]* aah how
6		about 29?
7	B	*[looks at map]* I would link that with 3.
8	F:	*[draws new link on map].*
9	C:	*[looks away from map and addresses team; extends left hand index finger]* The
10		strategic driver is succession, you know you are going to have to replace me and
11		others, that's the strategic manoeuvre. [right hand index finger touches left hand and
12		then points outwards as if divvying up something] The other things you are doing to
13		meet that end [gesturing with hands as if counting off items] how...you are developing
14		people to meet the strategic requirements…
15	C:	…of the business is how I see it *[turns to look at F and map]*
16	F:	*[looks at C]* The other way round?
17	C:	*[turns away from F and towards team]* I think it's the other way round personally.
18	F:	OK *[looks at team, waits for confirmation].*
19	C:	What's the driver? *[looks at E].*
20	E:	*[looks at C]* The driver is succession.
21	C:	Yeah.
22	F:	*[looks at map]* OK yeah, so basically what you saying is, it goes the other way
23		round....like that *[redraws link, then looks at D].*
24	D:	*[points at map]* So the issue is succession and planning is a step within succession.
25	C:	*[nods].*
26	D:	…so that's that succession is our target and then *[points at map and makes circular*
27		*movement with finger]*…the plans that we do within encompass those physical steps is
28		how understand it.
29	C:	*[looks at D]* We are developing individuals within the organisation to take into
30		positions. Our strategic desire is not to go to the market place to replace some senior
31		level, so the only other alternative is to develop within which is what *[points at map]*
32		then becomes the secondary …I think…[shrugs and opens arms and hands] I will be
33		gone soon so you know...*[looks at F]*
34	ALL:	*[laughing].*
35	C:	*[looks at team, gestures with hands, chuckles]* What's your opinions...

In the preceding segment C argues his case by invoking and reminding the group
about the future need to replace him and others as a key strategic driver (lines 9-14, tool-
triggered). D then aligns with C's interpretation (lines 26-28, tool-triggered), who
subsequently asks the remaining team members to express their 'opinions' on the formulation
just presented (line 35, actor-triggered). B does not participate in the discussion again until
the F restates part of his original formulation to encourage further exploration of the issues

within the team (lines 39-41, actor- and tool- triggered; line 44, tool-triggered).

36	F:	Ok so, I think what B is suggesting, maybe I'm wrong but a..because the issue is
37		3…*[looks and points at map]*
38	B:	*[nods]*
39	F:	*[turns to look at D]*, 23 is something that you will *[looks at C and points at map]*
40		have to do in order to tackle that issue, and if you accept that then *[re-draws*
41		*tentative link, then looks at team]* the arrow would go the other way round…
42	B:	*[nods vigorously]*
43	E, G:	*[nod]*
44	F:	…because it will help *[points at map, then looks at team]* to tackle 3.
45	B:	Yeah.

B's participation is only short-lived (lines 38 and 45), however, as C intervenes to

contest the above formulation again. On this occasion, however, the argument was not based

on the directionality of links between issues so far discussed, but on both their meaning and

location on the map, as can be seen in the following exchange about the issue of *developing*

managers to meet challenges (number tag 23) (lines 46-55, tool-triggered).

46	C:	*[points at map, then looks at D]* Well actually I still think it's slightly different.
47		*[looks a team; opens and closes hands]* There are new challenges within the
48		business which people have to develop to meet and that's part of what you're doing
49		in (unintelligible) *[extends open hand towards E]*, say in Middlesbrough. *[punches*
50		*left palm of his hand repeatedly]* Succession is a different issue than that. It's not
51		'meeting challenges', it's *[punches left palm of his hand repeatedly]* having the
52		skills required to run a business, and running a business is different than, say,
53		'meet...' *[points at map], then turns away from map and looks at team]*.I think,
54		'meeting the challenges' that has been suggested there *[shrugs, then opens hands*
55		*and* places them under chin*]*…
56	B:	*[looks at map]*.
57	C:	…They're almost separate issues.
58	B:	*[looks at map and gestures left hand in the air to indicate movement between to*
59		*points]* so you think 23 refers to developing people within their role rather than…
60	C:	It says *[points at map]* 'success to meet challenges', *[looks at D, extends right hand*
61		*towards map]*...
62	B:	*Yeah...*
63	C:	..but what are those challenges? *[raises hands repeatedly]* The challenge is the
64		challenge of 'succession' or is it 'meeting the new requirements of more efficient
65		business'? *[opens and closes arms]*…This here *[points at map and looks at D]* is I
66		think a broader issue than succession, that's meeting the business requirements as
67		they are today, tomorrow and long-term.

In the above exchanges C uses the map to draw boundaries around the meaning or

relations of certain issues (lines 43-55 and 63-67, tool-triggered). In contrast to the shift

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pattern, the map is not used to represent and negotiate knowledge differences but as a tool whose meaning is non-negotiable.

Interestingly, the issue of developing managers to meet challenges (number tag 23) was one of the original contributions by C that was gathered via the laptops earlier in the workshop. It is thus plausible that C attempted to reduce the ambiguity in the meaning of this issue because it was his own. Overall, C's formulation was relatively unchallenged, prevailed over B's formulation, and was eventually translated on the map.

Assembly

This pattern was characterised by team members engaging in a balanced mix of actor-triggered and tool-triggered visual interactions that enabled them to assemble their domain-relevant knowledge in a coordinated and non-conflictive manner. No contrasting positions are evident during discussion, and actors have a task-focused orientation to using and manipulating the tool, resulting in the efficient development of shared meanings and common knowledge.

The discussion concerning *staff turnover, development and reward* issues illustrate the nature of this pattern. At the start of this segment, F asks team members to identify on the map issues that should be placed together and related (line 3, tool-triggered). Team members began highlighting particular issues by uttering their number tags to locate them on the map first (e.g. lines 4-5, tool-triggered), and assembling them together via links drawn by the facilitator (e.g. line 6). At this point C contributes with a new concept: *reward* (lines 9-10, tool-triggered), whose meaning is then further elaborated (e.g. lines 12-13 and 20-22, actor-triggered) and subsequently related to the other issues on the map (e.g. lines 23-24, actor-triggered).

1	F:	*[looks at map and manipulates contents of map]* Right…
2	G:	*[turns away from screen to look at computer monitor, the looks back at screen]*
3	F:	…*[looks at screen]* what else is in there?
4	G:	Right I think *[points at map]* 24 bottom right that links with the uuhh *[looks at C]* '
5		development' one (number tag 25).
6	F:	*[locates concept and draws link]*
7	B:	And 41 I think potentially.
8	F:	Okay. *[looks at map]* And what are the links? *[highlights concept 41]*
9	C:	*[turns away from map to look at D; holds his head with left arm]* Where would you
10		think 'reward' fits is there?
11	F:	Uuhhmmm *[writes and enters the word 'reward' on map]*.
12	C:	*[looks at team then at map]* You develop people, you also develop expectations, and
13		you increase desire, reward and all that sort of things that are linked to that *[turns to*
14		*map]*.
15	F:	*[looks at map]* Uhhhm... so what, what, can we elaborate on reward 'rather' than
16		using single words,,,what do we mean?
17	C:	uuuhm…
18	F:	*[looks at C, then highlights new issue on map]* 'Ensure appropriate rewards' are in
19		there?
20	C:	*[looks at F, then at team]* Well, there's two sides of rewards, there is the... there is
21		the pay for your labour , and then there is the uuuhhhm the reward for profitability
22		uuhm and value on the business.
23	G:	*[looks at C and then at map]* Does reward link to 'retain talented staff/managers'?
24		(number tag 41).
25	C:	*[looks at G]* I think there has to be an element of that doesn't it?
26	F:	Yeah *[draws link]*
27	C:	*[looks at team]* You can't pay at the bottom, bottom quarter and expecting...
28	D:	*[Interrupting]* It's normally 'reward and recognition'
29	F:	Yeah *[edits phrasing of issue on map]*
30	C:	Yeah, *[looks at F, then at map]* 'reward and recognition'

In the preceding segment, shared meaning and common knowledge about the notion of 'reward' is jointly developed (e.g. lines 27 and 28, actor-triggered). A similar pattern is observed later on in the discussion, when team members are exploring links around the issue of *retaining our talented staff/managers* (number tag 41) (e.g. line 31, tool-triggered), and realise that the emergent knowledge structure displayed on that map encapsulated a subset of SkillsCo's published strategic objectives (e.g. lines 38-39, actor-triggered).

31	B:	*[looks at map]* Wonder if this comes out... that is ' succession planning'?
32	D:	It is a very good point...
33	B:	[looks at D then points at map] So you do all this bit...
34	C:	*[looks at D]* yeah it is, isn't it? you did...
35	B:	...you manage 'leadership and development' and you do 'succession planning' all...

36	C:	*[Interrupts; looks at D]* If you look at our strategic objectives...*[looks at B]*
37	F:	Like that? *[draws links on map]*.
38	C:	*[looks at D; gestures his hands as if enumerating items]*...SO2 (i.e. Strategic
39		Objective 2) is to 'recruit, retain,...'
40	B:	Yeah.
41	C:	... and develop'.
42	F:	Okay.
43	C:	So it does comes out of it *[points at map]*.

To summarise, in the preceding segment team members did not use the map to create new meanings or knowledge, nor did they use it to advance particular positions. Indeed no positions are evident in the above exchanges. Instead, shared meaning and common knowledge about issues and their relationships are assembled through and integrated within the map. Team members' knowledge integration efforts were rapidly reflected through on-the-spot changes to the map (e.g. lines 31, 35, 38-39, 41), and the map become an evolving live repository of domain-relevant knowledge. Next we discuss our findings.

Discussion and Conclusion

While a number of recent studies have focused on the mediating effect of particular tools on strategy making (Denis et al., 2006; Giraudeau, 2008; Kaplan, 2011), we have limited understanding of strategy tools-in-use (Jarzabkowski and Kaplan, 2014) and particularly *how* actors visually interact with strategy tools to produce knowledge in workshops and the role of tools affordances in this process. Addressing these gaps in the context of strategy workshops is pertinent in strategic management debates. Compared to other forms of group decision-making, strategy workshops involve the discussion among participants of issues of strategic importance for an organization. As such, they represent an appropriate research context for the contained examination of the ways strategy tools are created and used by managers during debates about strategic issues. This follows Jarzabkowski and Kaplan (2014), who note that: "If we want to understand strategy tools, there is little substitute for spending time in the field watching organizational members use them…The actual use of tools is emergent, requiring

the researcher to be in the right context at the right time to observe what unfolds." (p.16).

Table 3 below summarises our principal findings and demonstrates how the affordances of the strategy tool enabled the knowledge production patterns evident in the workshop[3]. Combined with our quantitative evidence in Table 2 we find that in the *shift*, pattern, contrasting positions are evident and team members engage mostly in *actor-triggered* interactions to challenge each other openly, while *tool-triggered* interactions are employed to support their individual formulations at particular moments of the workshop, as illustrated in our findings. In *inertia*, contrasting positions are evident and team members engaged mostly in *tool-triggered* interactions to render and control particular interpretations and knowledge about strategic issues or their relationships. In *assembly* there are no contrasting positions evident and team members engaging in a balanced mix of *actor-triggered* and *tool-triggered* visual interactions that enabled them to assemble a shared appreciation of the particular issue in a coordinated and non-conflictive manner.

Additionally, we argue that the strategy tool produced in the workshop exhibits particular *affordances* that can lead to cognitive change and "meaning negotiation" among team members (Ackermann and Eden, 2010, 2011b; Langfield-Smith, 1992; Schweiger, Sandberg and Ragan, 1986). For example, at the beginning of the workshop, strategic issues and knowledge are distributed and unstructured and the strategy tool makes them visible, and thus concrete and available, to those involved. As such, the tool offers tangibility to strategic issues and knowledge (*tangibility* affordance). In addition, the strategy tool makes the visual association of strategic issues possible (*associability* affordance) by allowing different types of links between issues to be drawn (e.g. directional, temporal, non-directional) based on some shared attribute (e.g. causality as in 'issue A' causes 'issue B'), as well as different formats to highlight a single attribute (e.g. placing 'issue C' within a box to indicate it is strategic priority). The contents of the strategy tool can also be visually edited and updated

'on-the-spot' on request (*editability* affordance), and its contents be visually tracked (*traceability* affordance) both temporally (each issue in the tool has a visible number tag indicating the order in which it was entered) and structurally (e.g. the embedded software allows analyses that can visually highlight 'busy' issues related to many other issues).

Our focus on affordances allows us to explain how the strategy tool is used to create and share knowledge about strategic issues in the *shift* and *assembly* patterns. It also helps us understand how the strategy tool is used to reproduce knowledge in the inertia pattern. For example, the *tangibility* affordance enables the legitimation of visible knowledge at the expense of non-visible knowledge, and the *editability* affordance allows disagreement and debate about what should be (visually) included or not in the tool to occur. This finding confirms the view by Jarzabkowski and Kaplan (2014) that affordances both constrain and enable different kinds of actions by managers, and, as such, allow them to engage in strategy making.

Insert Table 3 about here

In conclusion, this study contributes to the strategy-as-practice perspective. Despite the growing corpus of studies into strategy tools (Giraudeau, 2008; Jarzabkowski et al., 2013a; Kaplan, 2011; Molloy and Whittington, 2005; Wright et al., 2013), we still have limited understanding about *how* actors visually interact with strategy tools and *how* strategy tools are used to produce knowledge about strategic issues in workshops. In addition to its empirical insights, our study makes a timely methodological contribution as there is increasing attention on the use of video-based methods for the study of practice phenomena, such as materiality (Jarzabkowski et al., 2013b; Jarzabkowski and Kaplan, 2014). Our study also provides useful conceptual extensions towards a more nuanced appreciation as to *how* actors visually engage with tools by revealing the co-existence of tool-triggered *and* actor-

triggered visual interactions during workshops. Further, we show *how* the affordances of strategy tools constraint and enhance visual interactions during workshops. Accordingly, we argue that the notion of *affordances* provides a conceptual addition to current strategy-as-practice literature (Jarzabkowski et al., 2013a; Spee and Jarzabkowski, 2009; Vaara and Whittington, 2012).

We also contribute to visual organization studies. A number of recent reviews of such studies point to the potential of visual methods for practice-oriented research (Bell and Davison, 2013; Meyer et al. 2013). Our study fulfils this potential and methodologically highlights a multimodal approach (as advocated for visual studies, see Meyer et al., 2013) by paying attention to both the textual and visual interactions in tool use. Our findings also extend studies on visual aspects of affordances (Fayard and Weeks, 2007; Leonardi, 2011), by revealing three patterns through which tool affordances influence visual interactions during workshops. Hence, our study addresses the call by Leonardi and Barley (2008) for research that develops typologies of constraints and affordances.

Finally, our study provides insights for practitioners. For workshop facilitators, it demonstrates the benefits of designing and adapting the sequence of a workshop not only around the particular issues that need to be discussed but also around the ways visual interactions develop during the workshop. Through experience, facilitators could be found to develop particular recipes to speed up or otherwise improve visual interactions. For management educators, we show the importance of educating future managers on the complex visual reality of workshops. For example, learning activities could be executed such that participants are videoed acting in mock workshops and then get the chance to reflect on their visual interactions.

We acknowledge that our study has a number of limitations. First, we studied a single workshop with a single strategy tool, meaning that we cannot rule out the possibility of

alternative visual interactions in particular industries or when multiple strategy tools are employed. Future studies could explore the extent and significance of variations in visual interactions across multiple contexts (industries, countries) or when particular strategy tools are used. Second, we did not examine the relative importance of particular visual interactions. Future work, could uncover the importance of visual interactions by relating them to particular workshop outcomes. Research could also focus on how *visual expectations* of participants (how they expect the tool will influence their interactions) change during a workshop. Finally, a promising avenue of research would be to relate patterns of visual interactions across multiple workshops over time with particular organizational, interpersonal and cognitive outcomes, as well as exogenous factors (such as: location and time of the workshop).

Endnotes

[1] The company name and the identities of workshop participants are all disguised.
[2] *Group Explorer* was developed at the University of Strathclyde by Colin Eden and Fran Ackermann. The associated software package is available via payment of an academic or commercial license. More details are available at: http://www.phrontis.com/GE.htm (date accessed: 20 November, 2013).
[3] Although not the focus of the research presented here, our discussion of the strategy map affordances can also shed light into the affordances of the supporting *Group Explorer* technology used to build the strategy map. These affordances, however, are entangled and thus difficult to isolate both methodologically and in practice.

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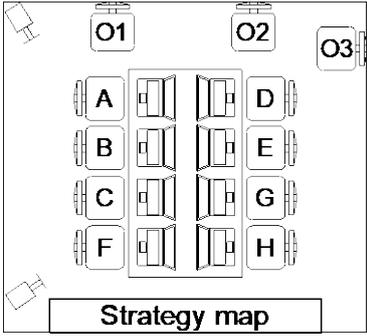
Table 1: Categories of Visual Interactions

Origin	Second-order Category	Example from video data (timings in brackets)
Actor-triggered	**Actor-contained** The interaction involves actors looking/gesturing at each other while speaking (e.g. nodding, using hands, etc), without explicitly orienting to the tool.	Actor C looks at Actor G, while speaking (01:24:46)
	Actor-to-Tool The actor first looks/gestures at other actor(s), then looks/points at the tool.	Actor G looks at Actor D (00:43:38) Actor G points at the tool (00:43:40)
Tool-triggered	**Tool-to-Actor** The actor first looks/points at tool, then looks/gestures at other actor(s).	Actor C points at the tool (00:38:11) Actor C looks at team and gestures at Actor D (00:38:19)
	Tool-contained The actor looks/ points at tool only while speaking, without explicitly engaging with other actors.	Actor C looks at the tool while speaking (01:26:21)
Room layout (including position of cameras – O1, O2, O3: observers (from consultancy team), A to H: participants); F: facilitator.		

Table 2: Analysis of Visual Interactions

Actor	Actor-triggered		Tool-triggered	
	Actor-contained	**Actor-to-Tool**	**Tool-to-Actor**	**Tool-contained**
Actor	**Shift** **(49 coded visual interactions)**			
F	✓	✓	✓✓✓	✓✓✓
D	✓✓✓✓	✓✓✓✓✓✓	✓✓	✓✓
E	✓✓		✓	
G	✓✓✓	✓✓		
A				
B	✓✓		✓	
C	✓✓✓✓✓	✓✓✓✓	✓✓✓✓	✓
H				✓
Proportion	36.7%	26.5%	22.4%	14.3%
Proportion (exc F)	45.2%	28.6%	16.7%	9.5%
	Inertia **(49 coded visual interactions)**			
F	✓✓✓	✓	✓✓✓✓	✓✓✓✓✓✓
D	✓		✓✓✓✓	✓✓
E	✓✓		✓✓	
G	✓		✓✓	
A				
B			✓	✓✓✓✓✓
C	✓✓✓✓	✓✓✓✓	✓✓✓	✓✓✓
H				
Proportion	22.4%	10.2%	34.7%	32.7%
Proportion (exc F)	22.9%	11.4%	37.1%	28.6%
	Assembly **(28 coded visual interactions)**			
F	✓	✓✓	✓✓✓✓✓	✓
D	✓		✓✓	
E				
G		✓	✓	✓
A				
B			✓	✓✓✓
C	✓✓✓✓	✓✓✓	✓	✓
H				
Proportion	21.4%	21.4%	35.7%	21.4%
Proportion (exc F)	26.3%	21.1%	26.3%	26.3%

Table 3: Affordances, Visual Interactions and Knowledge Production Patterns in Strategy Workshops

Affordance	Shift		Inertia		Assembly	
	Affordance role	Pattern description	Affordance role	Pattern description	Affordance role	Pattern description
Tangibility: ability to make its contents visible and concrete	Brings domain-relevant knowledge and expertise to life, and makes it a source of negotiation.	Two contrasting positions are evident; each position is explored in an open discussion mediated by a specific mix of visual interactions: actor-triggered interactions are used to openly challenge particular formulations and knowledge about strategic issues or their relationships, using tool-triggered interactions only at particular points to support these formulations and knowledge. These visual interactions enable a gradual abandonment of initial positions and the development of novel understandings and knowledge.	Legitimises what knowledge is valid and included in the tool, and what knowledge is not.	Two contrasting positions are evident but only one position is fully explored through a particular mix of visual interactions t at the expense of the other; tool-triggered interactions are mostly used to render and control particular formulations and knowledge about strategic issues or their relationships. The tool's content is subject to debate but alternative tool configurations representing contrasting perspectives are not fully explored during discussion, resulting in the prevailing position becoming legitimised and translated in the tool.	Provides opportunities for visually sharing and integrating domain-specific knowledge and expertise	No contrasting positions are evident. Development of shared meanings and common knowledge takes place by engaging in a balanced mix of actor-triggered and tool-triggered visual interactions that allows the assembly and elaboration of domain-relevant knowledge and expertise in a coordinated, efficient and non-conflictive manner.
Associability: ability to relate its contents based on shared attributes	Visually relates and identifies issues or formulations to develop a shared representation of new knowledge.		Visually relates and identifies issues or formulations to develop a biased representation of knowledge.		Visually relates and identifies issues or formulations to develop a shared representation of common knowledge	
Editability: ability to modify its contents instantaneously	Allows knowledge-related negotiations to be easily reflected in visible changes to the tool's content.		Allows disagreement and debate about what should be included or not visually in the tool to occur.		Allows knowledge integration efforts to be easily reflected visually in the tool's content	
Traceability: ability to relate its contents temporally and structurally	Affords opportunities to visually survey and assemble knowledge-related negotiated agreements.		Allows choice of where to visually focus or not.		Allow to be used as a 'live' visual repository of domain-relevant knowledge	