

SPECIAL ISSUE OBSERVATION

Enhancing *In Situ* Observation with the SCI Design (Shadowing–Conversations–Interview to the Double) to Capture the Cognitive Underpinnings of Action

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Abstract

In situ observation methods have essentially been mobilized to study actors' doings, but they have also been mobilized (through studies in the stream of situated action) to study cognition in these same organizational actors. The existing methodological designs have helped to enhance our knowledge of certain cognitive underpinnings, but they carry two limits: (1) they are deployed following a stacking logic, that is, by triangulation, which is more about compensating for the weaknesses of the component methods than uniting their strengths, and which has the pitfall of capturing cognition and action separately; and (2) they cannot capture all the situated and structuring facets of the cognitive underpinnings of action. Here we propose to overcome these barriers with the SCI design: S for shadowing, C for conversations, and I for an interview borrowing on the 'interview to the double' technique. This design is built in a synergy-guided effort that hinges on tightly meshing these three techniques together at fieldwork deployment. This articulation makes it possible to capture action and cognition together and to surface both the situated and structuring facets of cognition underpinning action. The SCI design is easy enough to deploy in fieldwork across a whole range of research settings.

Keywords: *Action; Cognition; Shadowing; Conversations; Interview to the double*

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As such, my informants' descriptions of the qualities of attention – and the experience-based mechanisms associated with them – are subject to questions concerning veridicality that are fundamentally linked to the research methodology employed. Perhaps by adopting other methodologies, such as neurophysiological approaches, researchers could circumvent these limitations and develop an account of attention and its qualities that either validates or challenges the findings reported here" (Dane, 2013, p. 73). This is how Dane concluded on the limits of his study into the attentional properties of trial lawyers in court via observations and interviews, in reference to the research method employed to capture the cognitive process (attention) underpinning the way the trial lawyers argue their case in court. At the end of his article, Dane proposed a neurophysiological approach as a way to empirically capture cognitive phenomena as they unfold. The issue he raised here is that it is hard to study via observation what are essentially covert phenomena at work. Do we really need to put electrodes on the heads of the

actors we study to understand the cognitive mechanisms they deploy in action? A fine-grained understanding of the cognitive drivers underpinning action, both in their visible and invisible aspects, is one of today's big challenges, as understanding what guides organizational actors to do what they do helps us better understand the constraints weighing on action at work (see, e.g., Falzon, 2004; Ombredane & Faverge, 1955; Pavard & Karsenty, 1997), the dynamics underpinning observed practices (Feldman & Orlikowski, 2011; Nicolini, 2012), and the potential cognitive load that the actors are under pressure to handle (Bidet, 2011; Datchary, 2011; Datchary & Licoppe, 2007; Isaac, Kalika, & Campoy, 2007). Cognitive phenomena may be hard to capture with our observational senses, but studies in the stream of situated action (Suchman, 1987) use observational methods to study action and its cognitive underpinnings, such as decision-making processes, attentional processes, and even sensemaking processes. These *in situ* observation methods can collect and compile richly informative contextualized data on routine behaviors in all their complexity and their multiple

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facets, where Mintzberg's (1973) seminal study on managerial work paved the way. Although observation is useful for studying readily perceived events like the actions or visible traces of *in situ* cognition (Journé, 2005), it cannot (or can only partially) understand the cognitive underpinnings of action when action is ambiguous or when cognitive underpinnings are embedded in features that go beyond the here-and-now (such as a lawyer who routinely pleads for exactly the same sentence, regardless of the case filed). These structuring underpinnings, embedded in features of cognition that are connected to the actors' own tacit knowledge, emerge when actors encounter similar situations and they lastingly structure the way actors conduct their actions. Capturing the situated and structuring dimensions of cognitive processes at work therefore poses a methodological challenge for observational methods. The existing methodological designs have enhanced our knowledge of action and its underlying cognitive underpinnings, but they carry two limits that rule out attempts to go further and systematically capture the tandem situated and structuring dimensions of cognition at work. First, certain designs carry a pitfall in that they stack up methods deployed on top of observation, without articulating them together (stacking tactic). While this stacking tactic often reflects a data triangulation strategy, the disconnect between the methods deployed fails to capture a coherent picture of the cognitive processes studied. Second, certain designs that do implement an articulated set of methods (synergy tactic) still only partially capture the cognitive underpinnings of action, as they focus data collection exclusively on either the situated feature or the structuring feature. How can we use methods employing *in situ* observation to systematically capture action with its cognitive underpinnings at work in both the situated and structuring dimensions? Here, to address this methodological challenge, we propose a new methodological design grounded in a core foundation of *in situ* observations, which we have dubbed shadowing–conversations–interview to the double (SCI) design. The SCI design is a methodological triad that mobilizes shadowing – an on-the-move observational method, conversations – between researcher and actor observed, and an interview borrowing on the interview to the double technique.

As the SCI design borrows and builds on the situated action research, we begin by setting out three fundamental principles underpinning situated action theory and the implications for research into capturing cognition. We go on to look through various data collection methods that mobilize *in situ* observation to study cognition. We then analyze their stacking vs synergistic design and the characteristics of the focal cognitive underpinnings they study, which prompts us to look at the limitations of these methods. This leads into an outline of the methods adopted here as part of the SCI design – shadowing, conversions, and a version of the interview to the double method. A third section gives a

walk-through of the SCI design together with empirical excerpts taken from observational material to illustrate the articulation between the SCI design component methods and the way this articulation synergistically captures the situated and structuring features of cognitive underpinnings. The fourth and final section shares our concrete thoughts on the SCI design implementation and sets out its limits. Discussion also covers the two major contributions that the SCI design brings to *in situ* observation methods, that is, it is synergistic, and this synergy brings advantages over the triangulation tactic, and it is able to capture both the situated and structuring cognitive underpinnings of action.

Capturing cognition through action: A situated perspective

Let us begin with a summary of three fundamental pillars underpinning the epistemological foundations of the situated action theory in which the SCI design is grounded. First, the SCI design considers action and cognition as tightly intertwined. Second, the SCI design considers naturalistic observation as the most appropriate method for empirically capturing the cognitive underpinnings of action. Third, while the SCI design does consider cognition in its embodied visible dimension, it also takes into account the tacit features of cognition that are harder to capture via the senses. Here, it focuses on the features structuring cognition as it unfolds *in situ*, that is, the potential patterned regularities in the enactment of cognition, rather than just its situated dimensions. Below we expand on these three key principles.

The cognition–action link

The SCI design borrows on studies mobilizing the notion of situation and belonging to the stream of situated action theory (Suchman, 1987). The name 'situated action' connects back to various streams of research where the common denominator is that the situational setting is considered both the frame that builds the action and the outcome of that action. Seeing the situation as a frame shifts the focus onto social dimensions and artifacts shaping and influencing the action, while seeing the situation as an outcome of action underlines its emergent, indeterminate nature. While cognition is one element underpinning the dynamics of action, a situated perspective reads cognition not as preceding action but as part of it. The key sources of this work connect back to the stream of pragmatist sociology (Dewey, 1938, cited by Journé & Raulet-Croset, 2008) and interactionism (Goffman, [1964]1988, cited by Journé & Raulet-Croset, 2008). These original streams branched out into different trajectories according to the importance they lend to discourse (the ethnomethodology approach, e.g., Suchman, 1987) or artifacts - ergonomics (e.g., Theureau, 1992),

cognitive ethnography (the notion of 'distributed cognition'; Hutchins, 1994; Hutchins & Klausen, 1998), or even artificial intelligence (Conein & Jacopin (1994) citing Clancey (1989)). The study of organizations includes management research aligned to the situated action stream, prominently *practice-based studies* (e.g., Nicolini, 2012; Whittington, 1996), as well as studies dealing with Managerial Work Behavior (MWB; Tengblad, 2012; Vie, 2010), *sensemaking* (Weick, 1995), and ways of constructing coordination (for example in extreme settings: Rix-Lièvre & Lièvre, 2010). Similar links also emerge in work psychology (e.g., Clot, 1999) and work sociology (Datchary, 2011). Below we set out the data collection methods employed in these streams of research, without systematically referencing which discipline they come from.

Naturalistic observation for capturing cognition in action

The SCl design is grounded in naturalistic observation, a method widely adopted in research adopting a situated action approach (Relieu, Salembier, & Theureau, 2004). Goffman advocated naturalistic observation (Cefai & Gardella, 2012; Goffman, [1974]1991) as the most relevant method for capturing interactional dynamics. In contrast to indirect observation methods, which are mobilizable for experimental protocols, *in situ* observation methods can collect and compile richly informative contextualized data on actors' behaviors (Johnson & Sackett, 1998) and more generally on all the environmental elements capturable by our five senses (Arborio & Fournier, 2003; Journé, 2008). When they are mobilized as the core of the methodological design, the intention is to collect data on organizational processes and how they unfold (e.g., routines: Feldman, 2000), and the dynamics of actors in their everyday work setting (e.g., managerial work: Mintzberg, 1973, 2009) or in more exceptional settings (e.g., strategic change initiation: Gioia & Chittipeddi, 1991). Naturalistic observation can also capture certain features of cognitive phenomena at work. This is where research streams in situated action (Suchman, 1987) and distributed cognition (Hutchins, 1994; Hutchins & Klausen, 1998) reveal the way it is possible to study - through observation - cognitive underpinnings at play *in situ*. These two approaches give clues to help "define the observable traces of cognitive features engaged through the *in situ* activity" (Journé, 2005, p. 70). They shift the focus from the observed actors toward situational elements surrounding them – particularly those actors and artifacts that shape the construction of action and cognition *in situ*. Suchman (1987) highlights the way individuals adapt their actions to situational features and rearrange their environments to support their actions and stage their inventiveness. Hutchins and Klausen (1998) show that information – the backbone of cognition – propagates through representational media (individuals and artifacts). Airline pilots' representations

of their in-flight situations are vectored through the information they receive from the cockpit instruments and the speech they share with the other pilots (hence the construct of 'distributed cognition'). These two approaches show that it is possible for a researcher to 'observe' actors' cognition through their discourse and through the actions they engage with the elements (artifacts and individuals) of their environment. Naturalistic observation can thus be mobilized to collect data on action-in-progress and capture cognitive underpinnings through observable traces (e.g., verbal, written, and attitudinal) in the environment.

Sedimented and emergent cognition

The cognitive underpinnings of action do not just emerge *in situ* – they also have structuring features that are trickier to capture purely through observation as they stretch beyond the framed specifics of the observed situation. These structuring features have a lasting influence on cognitive underpinnings and their articulation with action. This multifaceted structuring of cognition surfaces in both cognitive approaches and situated approaches. Here we are not positioned in a cognitive approach, but we do take a detour via cognitive psychology to get a firm grasp of what these cognition-structuring features may be. The construct of 'cognitive structures' comes from cognitive psychology. Cognitive structures are cognitive elements involved in the relationship individuals share with their environment and their perception of it. These cognitive elements are connected to an individual's experiences and knowledges (Beyer et al., 1997; Matlin, 2001; Noordegraaf, 2000; Ocasio, 2011; Walsch, 1988, 1995). They are "simplified mental representations" (Walsch, 1988, p. 873) that enable individuals to understand the environment around them. The notion of cognitive structure ties into a host of concepts, from implicit theories and cognitive maps to suppositions, thought patterns, and belief structures (Walsch, 1988). Fiske and Taylor (1984, p. 140) define cognitive structures as representing "organized knowledge about a given concept or type of stimulus. . . . It contains both the attributes of the concept and the relationships among the attributes". This definition shares overlap with Brief (1977) who asserts that cognitive structures are "defined from actions on objects, their properties and relations among the properties" (Brief, 1977, p. 197). These definitions from cognitive psychology may inform on how cognition finds structure through the link between perception and interpretation, but they say little about the link between these structures and *in situ* action. In situated approaches, as adopted by Goffman ([1974]1991), the rules play a structuring role (e.g., the traffic rules for pedestrians crossing the road), giving individuals a frame of action, guiding their cognition – and interaction – *in situ* (without precluding any adjustments that the actors may make). Situated approaches thus show that cognitive

underpinnings connect into frames that influence how we engage action but without crystallizing hard fast rules. For a concrete illustration, let us take the case of a person showing concern for animal welfare. As a rule, that person would never behave in a way that is liable to hurt an animal. Imagine now that he/she is driving a car with their newborn baby on board and that they suddenly see a hedgehog in the middle of the road. At that precise second in time, rather than risk swerving late and fast, which would be dangerous for both car and passengers, he/she decides to run straight over the little animal. In this situation, the drive to protect the baby outweighs any concern over the hedgehog's life. Therefore, the cognitive underpinnings that deploy *in situ* may – according to the situation encountered – be embedded in the features of the situation (run over the hedgehog to not risk having an accident with the baby on board) or sedimented deep within individual cognition and influence action in a more systematic way (care for animals and so try to miss the hedgehog when and where possible).

The underpinnings that lastingly structure cognition may well deploy depending on the features of the situation encountered, but they are not situation-specific, largely because they are embedded in the actors' tacit knowledge. This tacitness feature may be linked to an implicit interactional frame that is shared by all (Goffman, [1974]1991) or, more specifically in the professional sphere, connected to the knowledge that the actors accrue and develop through and at their work. The actors can thus draw on inside knowledge of the environment gained through progressively accrued experiences. They know what they need to take in or filter out to achieve their work objectives, and they use this knowledge to guide and readapt their actions (D'Eredita & Barreto, 2006). This tacit knowledge can be qualified as practical knowledge (Lièvre & Rix-Lièvre, 2009) in the sense that it directly serves and informs everyday action. The tacitness of these cognitive underpinnings leaves even the actors themselves unaware that they are mobilized for action. Even if certain empirical traces of these structuring underpinnings are capturable *in situ* (borrowing Goffman's example: seeing a pedestrian take a pedestrian crossing gives us a clue that they may be applying rules of highway code), they reach outside the frame of situations observed and thus cloud the effort to understand cognitive underpinnings exclusively via *in situ* observation. They add complexity either because they are not (or not readily) visible as they do not express directly from the focal situation, or because they cannot be interpreted with any real precision from the empirical trace alone. The crux of the methodological issue thus resides in extracting this tacit knowledge – the structuring driver of *in situ* cognition – that even the people themselves mobilize without actually realizing it (Polanyi, 1962). Effectively capturing all the situated and structuring facets of cognitive underpinnings is thus a very real methodological challenge for situated approaches.

Below we set out the *in situ* observation-based methods mobilized by research belonging to the situated action stream.

Methods mobilized for capturing cognition

First, we set out the *in situ* observational methods, the features of cognitive phenomena they serve to capture, and their limits. We then set out the methodological add-ons widely mobilized in management research to address the limits to using these observational methods alone, that is, video recordings, interviews, and potentially even conversations. We also set out the limits inherent to their methodological designs, which chiefly stem from the disconnect between data collection protocols deployed to capture action and to capture cognition. Finally, we expand on designs that we qualify as synergistic, with data collection protocols that articulate cognition capture and action capture, but that still fall short of capturing both the situated and structuring cognitive underpinnings of action.

In situ observation methods

In situ observation can capture cognitive underpinnings through their observable traces, such as actions and dialogues between actors (see, e.g., Garreau, Mouricou, & Grimand, 2015; Journé, 2005; Musca Neukirch et al., 2018; Noordegraaf, 2000; Orvain, 2014; Rouleau, 2005; Steyer & Laroche, 2012; Teulier & Rouleau, 2013; Vaara, 2000; Whiteman & Cooper, 2011). Journé (2005), for example, studies cognitive processes tied to decision-making and *sensemaking* among actors working in nuclear power station control rooms. His dynamic observation system with methodized note-taking on what the actors say served to collect all requisite evidence on situations encountered, artifacts involved, and the way actors make sense of undergoing actions. His research demonstrates that a flexible and adaptable observational design coupled with relatively structured note-taking around actions, artifacts, situational features, and actors and the dialogue between actors can all converge to collect meaningful data on *in situ* cognition.

Shadowing stands out as an on-the-move non-participant observation method that is particularly well geared to studying cognitive underpinnings whose observable traces move with the actors. The method consists of 'following selected people in their everyday occupations for a time,' which thus entails the researcher "to move with them" (Czarniawska, 2007, p. 17). It is also possible to shadow daily emergences of an artifact (see Bruni, 2005), but here, to facilitate readership, we will keep it simple and only talk about shadowing a person. The researcher conducting shadowing-type observation discretely follows the actor in their every move (like a 'shadow') blending into the environment (Czarniawska, 2007). Shadowing is a research method particularly well geared to capturing

micro-processes (McDonald, 2005) and tracking dynamics at work (Arman, Vie, & Åsvoll, 2012; Bruni, 2005; McDonald, 2005) as it helps contextualizing behaviors and attending the emergence of phenomena. It is thus possible to grasp *in situ* cognition. As shadowing involves fieldwork on-the-move with the actor, it opens scope for noting down the features of situations encountered, that is, contextual elements (social factors and artifacts, Suchman, 1987) involved in the expression of cognition, cues, and clues revealed through spoken (discourse) and written media (Hutchins, 1994; Hutchins & Klausen, 1998), and bodily moves (visible signals of cognition expressed *in situ*; see, e.g., Datchary, 2011).

However, *in situ* observation methods like shadowing do carry several limitations. First off, they remain heavily dependent on the researcher's capacity to take down exhaustive field notes on relevant elements when and while the action is quickly playing out. The first pitfall is therefore the gaps in field data on visible features of cognition. Second, while these methods can collect data on cognitive mechanisms that are readily accessible to the senses (i.e., that leave easily visible or audible traces¹), they neither help understand the structuring cognitive underpinnings – those so deeply embedded that they do not directly express in the observed situation, nor those that leave interpretively ambiguous traces (e.g., when the actor in discussion with a colleague seems to be looking over at a chart: is he/she also reading the chart or is he/she effectively looking in that direction but thinking about something else?). Spontaneous utterances voiced by actors (whether to the researcher or not) being shadowed can help overcome this issue by giving the researcher cues on what is guiding the observed action (such as if a manager sitting at their desk gives a heavy sigh and says: 'I'm going to have to deal with this email first, because it's flagged as urgent.'). However, vocal utterances are never systematic evidence, which exposes the study to the risk of gaps in the field data on the situated cognitive underpinnings that are difficult to interpret and the structuring cognitive underpinnings.

In an effort to collect more exhaustive data on actors' cognition, research turns to methodological add-ons, typically video recording systems, interviews, and possibly also conversations (although conversation is rarely presented as a mode of data collection in its own right).

Methodological add-ons to *in situ* observation methods

Research can set up video recordings for observational fieldwork phases to collect exhaustive data on the action and the way it unfolds. This tool frees up the researcher's attention

during fieldwork and enables unlimited playback of scenes observed and even scenes that may have been missed the first time through (Vesa & Vaara, 2014). It can collect enormously detailed data on actors' *in situ* sociomaterial environment (spatial arrangements, artifacts, people, etc.) and their bodily moves (Meunier & Vasquez, 2008; Vesa & Vaara, 2014), thus circumventing the pitfall of gaps in field data on visible features of cognition. Video recording has been mobilized in management science by researchers studying the dynamics of action – including collective action – and how the actors make sense of it. Meunier and Vasquez (2008) study the multifaceted and hybrid features of the organizing using a video-shadowing method that enabled them to shadow different people at a time and compile deep data on their actions, on the surrounding material environment, and on the verbal and nonverbal communication between them. Note, however, that video-recording systems cannot be set up in every single field research site, which narrows the researcher's scope for studying cognition on such sites. These limitations stem from issues surrounding acceptability of the video-recording system (ethical and legal matters) and its intrinsic limits (technical and practical ones) (Journé, 2008).

Alongside observational methods (and the potentially allied video systems), research often makes use of interviews (whether structured, semi-structured, or open-ended; Gavard-Perret et al., 2008) adding access to the actors' subjective experiential perspective. For example, the researcher can use interviews to test gaps between observational data and collected discourse, especially when the actors have organizational constraints to adhere to in their routine work action (to illustrate this type of constraint, Eriksson and Kovalainen (2008, p. 87) cited being duty-bound to give employees positive feedback). They can also aim to inform understanding on the observational data collected, but the risk there is collecting additional data that are disconnected from the situations that had been observed beforehand. Dane (2013) drew on semi-structured interviews to round off his observational analysis of trial lawyers arguing their cases. The aim was to understand their attention, so he chose to question the lawyers directly on their attentional focus (Dane, 2013). Even if what lawyers say during interviews does inform the researcher on the way they thought they focalized their in-court attention, it does not capture the actual attentional focus that truly happened *in situ* while the lawyers were arguing their cases. The questioning is disconnected from the situations observed, so the researcher is uncovering the cognitive underpinnings at play in the interview situation rather than the ones that were actually engaged in the action which happened in the past (Nicolini, 2009; Silverman, 2007).

Some studies sidestep this risk of discursive disconnect by using informal questioning (conversations) deployed in parallel to the core *in situ* observation. This informal questioning

¹The other three senses rarely capture such traces.

process, involving brief exchanges between observer and actor observed, is a mainstay of anthropology and ethnographic field research (Murchison, 2010; Russell, 1998). In the wake of the actor's action, and if there is any doubt over how it should be understood, initiating a conversation with the actor being shadowed can help better understand the meaning behind their action. As this in-situation questioning generally happens straight after the action observed, a quick conversation can collect data on the cognitive drivers guiding action at a given point in time. However, studies do not always report this type of informal questioning as a mode of data collection in its own right. These informal conversations tend to come across as a subcomponent of observation work (see, e.g., the methodological roll-up table given by Stigliani & Ravasi, 2012, p. 1237), and the modalities surrounding how they are deployed rarely get covered in any substantial detail (e.g., see, Teulier & Rouleau, 2013; Whiteman & Cooper, 2011). Sometimes researchers fail to integrate conversations in the data collection modalities even though there were part and parcel of their methodological design. Illustrative of this point, Walker, Guest and Turner (1956) considered their methodological design as exclusively built on non-participant observation and semi-directive interviews, even though their observation work also made use of informal conversations with the managers – a fact that transpires when they assert that they completed their notes with input from the foreman collected through phonecalls and quick conversations (Walker et al., 1956). Other studies explicitly report in their method that conversions were held, but without expanding on it any further. Readers find out almost as an aside – Dane (2013) is a case in point, as the researcher took notes on his conversations with the judge but the reader neither knows how these conversation-notes were mobilized nor the complementary knowledge they added to the fieldwork observation. Furthermore, the studies fail to systematically mobilize conversations (we are not told exactly when, in the observational fieldwork, these conversations take place), which means there may be gaps in the collection of data on the cognitive underpinnings of action.

Studies commonly co-mobilize *in situ* observation and these three methodological add-ons (video, interviews, and conversations) as a triangulation strategy, juxtaposing different methods to produce a unique knowledge on the focal phenomenon (thereby ensuring its validity; Eriksson & Kovalainen, 2008). Rerup (2009), for instance, took advantage of observations led during a 2-day seminar as a way to check the validity and consistency of 28 earlier interviews. These methods are not mobilized together in a way that has been thought out ahead of deploying them, but instead are implemented relatively independently, one by one. Even when studies do underline that interviews were used to inform what was picked up during the observation phase (see, e.g., Dane, 2013; Stigliani

& Ravasi, 2012), they give few clues on the way the interview was conducted and articulated with the observational fieldwork. This means the methods were piled up, as a tactic to increase the data collected or compensate for the limits of another component method, without putting any substantial thought into how they join up and how joining them up can serve a purpose. The upshot is that these methodological designs tend to carry the pitfall of capturing action and capturing cognition separately, which means they fail to capture the cognitive underpinnings of the actions observed.

Some methodological designs reach beyond this stacking logics (*observation + video + interview + conversations*), and tightly intermesh the articulation between methods employed (*observation × videos × interviews*). These methodological designs, which we qualify as synergistic, tightly connect and couple their observational and interview methods with a video recording set-up as a strategy to capture the action–cognition tandem. Among these synergistic methodological designs, we begin by looking at those foregrounding what really happened and collecting data connected to the situated features of cognitive underpinnings: the self-confrontation interview (Theureau, 1992), the crossed self-confrontation interview (Clot, 1999), the explicitation interview (Vermersch, 1994), and the *subjective re-situ* interview (Rix & Biache, 2004). Moving forward, we go on to outline the interview to the double (Clot, 1995), a specific interview technique focusing on action possibilities and capturing the cognitive underpinnings that lastingly structure action.

Synergistic designs

We qualify methodological designs as synergistic when they capture the action in tandem with its cognitive underpinnings. These designs hinge on tight articulation between both the interviewing exercise and its contextualization in action, thus producing superior insight compared to the knowledge produced by independently collecting data on both (as is the case with a triangulation strategy setting observations on one side and *ex ante* or *ex post* interviews on the other). The self-confrontation interview (Theureau, 1992), the crossed self-confrontation interview (Clot, 1999), the explicitation interview (Vermersch, 1994), and the *subjective re-situ* interview (Rix & Biache, 2004) count among these designs². They all mobilize a naturalistic observation method completed with a camera system, to which they conjugate a specific interview method that involves

² Here we have elected to restrict our analysis to the studies most heavily mobilized (see, e.g., Cahour & Licoppe, 2010; Rix & Lièvre, 2005) in disciplines tied to organizational psychology, ergonomics, and management science, and that have deployed intertwined methods and the reflexive situations they stage for the actors being observed (Cahour & Licoppe, 2010).

confronting the actor with (video-recorded) traces of their activity. The actor is questioned on the actions he/she has effectuated, in an effort to gain access to a more intrinsic vision of the activity, to emerge conflicts in how it unfolds, to gain access to the actor's *in situ* experience, or to gain access to the sense and meaning underpinning their action (Rix & Lièvre, 2005). The pivotal methodological articulation at the heart of these research designs makes it possible to discern observable traces of cognition (and even, via video, in deep detail) and other interpretively ambiguous traces (voiced during the interview). Interview delivery is dependent on the observations (and video recordings) completed, which thus avoids the pitfall of discourse decontextualized from action. It can also be "modeled" (Cahour & Licoppe, 2010, p. 245) to accommodate the aim of the research. This type of design connects into knowledge of the situated cognitive underpinnings of action recorded on video (Cahour & Licoppe, 2010). The difficulty in implementing these method formats is tied to the issues that we highlighted earlier surrounding video recording. Furthermore, while these designs are helpful for capturing situated cognitive underpinnings, they cannot capture the cognitive underpinnings structuring action in the way that the interview to the double can.

The interview to the double is a special interview technique that avoids the pitfall of having discourses reconstructed *ex post* by staging the context for the interviewee. We count this method among the synergistic designs because the way it deploys hinges on the tight interplay between cognition and action through a role-playing exercise to contextualize the actor's narrative. The interview to the double, a method mobilized by Clot (1995, 1999) and Gherardi (1995) and borrowed from the original method developed by Oddone (Oddone, Rey, & Briante, 1981) back in the 1970s, is an interview technique that involves an investigator questioning the actor on their activities in order to be ready to reproduce them exactly the same way. Organizational psychology researchers (Clot, 1995, 1999) mobilize the interview to the double method to gain access to the real full picture (not just the effectuated dimension), that is, to gain access to features of action that are held back or not deployed (what the actor thought about doing but couldn't or didn't, and why). The method is therefore helpful for capturing the structuring features of cognition, as these features connect to people's tacit knowledge and have lasting influence on their actions. Below we spell out we way the method is implemented and the way it unlocks access to people's tacit knowledge.

The interview technique entails asking the actor interviewed to imagine he/she has a 'double' who looks exactly like them, like a doppelgänger (but in this case, the researcher). The scenario is that the 'double' has to replace the actor at work the very next day and adopt the same behavior as the

actor would have – that is, to impersonate them without being suspected by colleagues. To get this done, the actor has to narrate all the information needed by the double to faithfully reproduce the actor's behavior patterns. Setting the actor this frame will guide the way they answer the researcher's questions – every time a question is asked, the actor needs to remember to give a fully comprehensive and explicit answer to enable their double to understand how he/she will need to adapt and adjust their action to the workplace situations that they are about to encounter and that the actor routinely encounters. This will lead the actor to transmit the tacit knowledges that they routinely mobilize in the course of their action and that will enable the double to understand what he/she needs to think and how to act in different situations encountered. Talk, especially when guided – what Tsoukas (2003) calls 'instructive forms of talk,' – is a vector of expression for tacit knowledge. The act of drawing attention to certain features (e.g., *couldn't we do this instead of that?*) of their action leads the person to reflexively 're-remember' their action and vocally translate the tacit knowledge underpinning their praxis (Tsoukas, 2003). The actor interviewed is led to express their primary concerns or things that are high in their consciousness (Nicolini, 2009) and that repeatedly underpin their everyday actions. This makes it a relevant method for studying cognitive underpinnings that escape observation alone as they run deeply on a level that stretches outside the situation encountered.

Table 1 sums up the substance of what we have set out so far; that is, the methods mobilized for studying cognition (*in situ* observation, video recordings, interviews, and conversations), whether they qualify as stacking or synergistic designs, the empirical features of cognition that they are able to capture, and their limits for commanding a firm grasp of the cognitive underpinnings of action.

The challenge is therefore to build a synergy-driven methodological design that, working up from *in situ* observation, is able to co-capture cognition and action and systematically collect data on both the situated and structuring features of cognition. How can we articulate the methods employing *in situ* observation to achieve this goal?

To address this methodological challenge, we propose a new methodological design that we have dubbed SCI, which co-mobilizes Shadowing as on-the-move observational fieldwork method along with Conversations and an Interview method borrowing on the interview to the double technique.

The SCI design

We present the key characteristics of the SCI design and its value for capturing both the situated and structuring cognitive underpinnings of action at work, and we report the broad spectrum of fieldwork settings in which it has been

Table 1. Roll-up of the methods mobilizing *in situ* observation, traits of the methods mobilized, and limits of the methods for capturing the cognitive underpinnings of action

Methodological design	Aim of mobilization to sense the empirical features of cognition	Method used	Limits for capturing the cognitive underpinnings of action
Stacking	Observable traces	<i>In situ</i> observation and shadowing	Gaps in field data on <i>in situ</i> cognition
	Observable traces (in deep detail)	Use of camera (video recordings)	No understanding of cognitive features when observable traces are ambiguous
	Observable traces that are hard to understand	Conversations	Nonsystematic deployment
	Observable traces that are hard to understand and cognitive features that are hard to observe	Interviews	Disconnected from action
Synergistic	Observable (in detail) traces that are hard to understand and cognitive features that are hard to observe	<ul style="list-style-type: none"> - Self-confrontation interview (Theureau, 1992) - Crossed self-confrontation interview (Clot, 1999) - Explication interview (Vermersch, 1994) - <i>Subjective re-situ</i> interview (Rix & Biache, 2004) 	Access only to situated cognitive underpinnings without being able to determine the structuring features
	Cognitive features that are hard to observe	Interview to the double (Clot, 1995)	Access to structuring cognitive underpinnings

implemented along with selected empirical excerpts from different fieldwork sites illustrating its synergy.

The SCI design – How it works, and what it brings

The SCI design articulates shadowing as on-the-move observational fieldwork method along with conversations method and an interview method borrowing on the interview to the double technique. The shadowing method can collect data on action and on observable features that are cues and clues to in-situation cognition. Shadowing is an appropriate choice of observational method for gaining a sharp understanding of cognitive underpinnings, as it focuses on a single actor, who is followed in everything they do throughout the day. Conversations with the shadowee help to capture cognitive mechanisms that would otherwise be difficult to interpret and that shadowing alone would fail to grasp. These mechanisms underpin the shadowee’s situated action and serve to understand why the person engages a given type of action in response to the situation. The interview method borrowing on the interview to the double technique serves to capture the cognitive underpinnings that lastingly structure the subject’s action and that are liable to drive their reactions to a range of situations (not just those observed at a precise point in time). We do not advocate mobilizing the interview to the double technique as deployed by Yves Clot: the method we practice does not include the second part of Clot’s protocol (confrontation to a recording of the interview during which instructions are given to the ‘double’); we mobilize the method without transformative ambition (which Clot’s approach allows through the confrontation to interview-evidence traces), and the method is deployed by a management sciences researcher who (in a vast majority of cases) has no

background training in psychology. This is why we have repeatedly taken the effort to state that the interview method adopted in the SCI design is borrowed from the interview to the double method. To successfully stage the situational strand of the interview to the double exercise, the researcher has to consciously ensure that the actor shares the same representation of the situational stage set and understands precisely which action the researcher is referring to. The field researcher must use every appropriate opportunity to ask for clarifications in order to confirm a shared understanding of the situation. For example, in the course of research studying managers’ supervisory activity, we asked the managers to describe the very first activity they do in the morning (*Researcher*: “What’s the first thing I do when I get to work in the morning?”). We re-checked that the manager had effectively understood that we were talking about the very first thing they do in the morning: “That’s what you do when you get in at 7?” It is equally essential to command a firm understanding of the actions performed, so the field researcher should continually ask for clarifications whenever they harbor any doubt over the way the action is performed. A manager tells us that the first thing he does in the morning is “greet the teams.” We ask for clarification – “I greet the teams... so, you mean I ask them questions or... I just say hello?” And he replies – “Hi, how are you, big smile, everything OK? A little joke, something friendly.”

The SCI design is mobilized synergistically. This synergy is visible in the way it deploys (all three methods tightly articulated together) and in the knowledge it produces (connected – not disarticulated – knowledge of the situated and structuring cognitive underpinnings of action).

Deployment of the SCI design involves conversations with the actors throughout the shadowing phase, so the researcher needs to be mindful to stagger these conversations at

Table 2. Roll-up of the synergistic features of the SCI design

Method	Contribution of each method	Synergy in deployment	Contribution of their synergistic deployment
Shadowing	Capture observable situated cognitive underpinnings	Can be reoriented in response to conversations and rereads of shadowing notes as groundwork to prepare the interview borrowed from the interview to the double method	Reach an understanding of the situated and structuring cognitive underpinnings of action
Conversations	Capture observable situated cognitive underpinnings that are hard to interpret	Systematically deployed according to the shadowing	
Interview borrowed from the interview to the double method	Capture the cognitive underpinnings structuring action	Questions constructed from shadowing work and conversations	

appropriate intervals in the observation schedule (to avoid encroaching too much on the actor's work). Conversations draw back on past shadowing (questions to the actor are oriented toward what was perceived but not understood) and can influence the shadowing work going forward (answers given by the actor may reorient attention onto focal observable elements). Conversations are conducted systematically (questions asked as soon as possible whenever there is any doubt or misunderstanding). During the interview borrowed from the interview to the double method, the researcher does not get the actor to look back over his/her workdays from start to finish but instead funnels questions toward singular activity moments that the researcher observed in the shadowing fieldwork and wants the actor to pass on to the double. The right moments will depend on the overarching research question. The researcher therefore needs to reread his fieldwork notes in advance to pick up on patterns (Dumez, 2013) of action (i.e., signs or signals of underlying tacit knowledge deployed as behavioral sequences punctuating action) or actions for which they struggle to capture cognitive underpinnings through the shadowing and conversation methods only. The interview borrowed from the interview to the double method can also help understand whether the cognitive underpinnings are only situated or emerge from deeper sedimentation in the individual's cognition. This interview is therefore conducted at the close of the shadowing period. Regularly rereading the shadowing notes will help to refine the shadowing work or refocus specifically on certain features, to see whether patterns emerge during observational fieldwork days or whether potential avenues for questions in the interview to the double are actually blind alleys. In the SCI design, each component method is coupled tightly to the others and adapted to fit the other methods deployed and the data collected.

In terms of knowledge output, embedding and intertwining the three SCI component methods affords a knowledge of both the situated and structuring cognitive underpinnings of action. The SCI design synergy stands apart from any stacking approach involving a divorced juxtaposition of one method to capture action and another method to capture cognition in an

effort to compensate for each method's respective biases. A strategy like that would fail to bring any incisive understanding of the underpinnings mobilized during the actor's action. Shadowing plus conversations can grasp the situated cognitive underpinnings and possibly emerge routes to structuring underpinnings that can be confirmed or disconfirmed during our interview to the double exercise. The interview can highlight the cognitive underpinnings structuring action in general and show whether they are engaged in actions observed or whether the cognitive underpinnings deployed are only rooted in the features of situations encountered at a given point in time. Let us go back to our example of the hedgehog in the road: I can use the interview to question the actor to learn why, at that precise point in time, I choose to not save the animal's life if I want to act like the driver. The researcher thus gets to the overriding cognitive underpinnings at that precise point in time (in this case, the situated ones not the structuring ones connected to his/her concern for animal welfare).

Table 2 summarizes the synergistic features of method deployment (intersecting methods) and outcome (knowledge output) afforded by the SCI design.

The SCI design has been mobilized in an array of different fieldwork settings, including to study managers' attention as part of research into managers' supervisory activity. It has been deployed to study the work of managers of a restaurant, a shop, and attractions in a theme park; production and development engineers in a cement work factory; managers of an online sales team in a company delivering energy-sector products and services solutions; a manager heading up a team of four project leaders at a company providing integrated technology and engineering solutions for a range of markets (e.g., installation of transport-network payment systems); and a manager of a team in charge of executing climate control engineering project contracts³. One variant between these fieldwork settings is the distance covered in the manager's typical day (between managers working in an open space and managers moving

³ For confidentiality reasons, we cannot disclose the real names of the companies and their managers.

around an industrial site or between different buildings) and the team's spatial proximity to the manager's office (managers working in an open space are constantly around their team's co-workers, which is not the case with a theme-park attractions manager). Some fieldwork settings are particularly exhausting for the observer's senses, which become saturated by visual overload (crowds of customers making it hard to keep track of the manager being observed, such as inside a busy store) or embattled by sound (machinery noise in certain zones of the cement works, forcing the researcher to wear PPE earplugs). Note too that while some fieldwork settings comprise a huge variety of material artifacts (an array of objects sold in the shop, or an array of foodstuffs and cleaning supplies in a restaurant), others are more austere (work in offices where the material artifacts employed are basically a computer and a telephone). The fact that the SCI design has been deployed across such a range of fieldwork settings is testimony to its adaptability and its ability to capture how cognitive underpinnings are mobilized in a broad spectrum of contexts.

A synergistic design: Empirical illustrations

We illustrate the synergistic features of the SCI design (synergies in methods deployment and synergies in data collected) through empirical excerpts collected from three of the many fieldwork settings investigated. We have selected empirical excerpts (vignettes) from different fieldwork sites in order to contrast the work settings in which the SCI has been deployed and enable readers to picture the SCI design implementation in a variety of settings.

The first two excerpts show how the researcher discovers the cognitive underpinnings structuring the observed manager's action through the articulation between the three methods (S, C, and I) and distinguishes these structuring underpinnings from the cognitive underpinnings stemming from the specificities of the situations encountered. These first two illustrations also show that the SCI design can capture cognitive underpinnings in fieldwork settings offering overt observables (due to the variety of material objects encountered) as well as settings where cognitive underpinnings are more discrete (less amenable to senses-based capture due to a smaller number of material vectors for cognition). The third empirical illustration shows how, unlike in the first two illustrations, the researcher can discover an absence of cognitive underpinnings structuring action whereas they had suspected one was present.

ATTRA fieldwork case:

- A theme park in the family-friendly entertainment sector;
- Manager observed: Léon, a theme-park attractions manager, heads a team of 120 up to 230 staff tasked with day-to-day running of the attractions (staff numbers vary across the year due to seasonality factors).

In vignette #1 below, Léon spends time installing a post in place of a wastebin to hold a rope marking out the queue line to an attraction. The company, ATTRA, uses a very specific term to designate this retractable-belt stanchion post used to zone foot traffic. The vignette narrative explicitly designates this word by calling it 'post' in square brackets. We adopt this same policy for all other company-specific terms in order to make the

Vignette #1 – Excerpts from observations on Léon

It is around 1 p.m. Léon leaves his office to take his lunch break. We cross the attractions zone and head for the canteen. On the way over, Léon bumps into Flavian, a member of one of his teams, who tells him he couldn't find [posts] and had to call to ask for some. Léon replies by telling him "There's two [in the personnel-only area]." After this brief interaction, Léon stops again for a quick chat with two other members of the team about their lunch break, then he continues his way over to the canteen. [...] It is around 1:45 p.m. After the lunch break, we go back across the attractions zone. Léon looks across to one of the attractions and says: "I didn't tell them to do that, but it's just common sense." He tells me that the queue line to the attraction is zoned off by a rope that his team has just put in place. Léon heads over to greet the assistant who stood next to the rope. The assistant, uncued, quickly tells Léon that "the wastebin was installed because we were missing a [post]" and that he was "[holding] the wastebin because the set-up is unstable." The rope marking out the queue line is fastened to a stanchion post at one end and wrapped around a wastebin at the other. Léon turns his head and protests that there is a wastebin missing at a low wall where a crowd of people are eating. A girl on the team walks past us, says hi and swaps a few words with Léon, all without changing tack. She also informs him that his one-to-one interview with team member Stéphanie is at 2:00 p.m. and not 2:30 p.m. Léon sets off. I ask him where he's going, and he answers that he's going to look for a [post]. We enter the staff-only area, and Léon fetches a [post] from somewhere down in the basement. He hauls it back up the stairs on his own, telling me that "each [post] weighs something around 100 kilos." He carries it to the place where the bin is. As the queue has gone down, he tells the team member stood by the wastebin: "There's no big queue, so we can start by shortening the guide rope." Léon unties the rope from the wastebin, shortens the rope, hooks it into position on the [post], then turns to me and says – "It helps to have a good memory," as he had remembered where he would find this [post]. Léon then shortens the rope around the post some more while explaining that "if the rope's too long, it [looks bad to customers]." Léon tells me that "what's urgent is not the interview with Stéphanie, it's getting the rope held stable with the banner; otherwise it creates a hazard for [customers]." He then adds that "it's in the details – details speak volumes," alluding to a little banner hung on the rope: the banner flags where the rope spans, which helps prevent injury to small children ("otherwise it could hurt a kid's neck"). As we leave the attraction behind us, Léon comes across two members of his team, lets them know exactly where he found the [post], and adds "you need a good memory." Then, he gives them orally three phone numbers he knows by heart, so that they can call them if they need an extra [post] again tomorrow.

vignettes easier to read and to anonymize the company, whose trademark product terminology would make it identifiable.

This shadowing excerpt above reveals the importance Léon attaches to having a proper stanchion, not a wastebin, to hold the queue line control rope. His watchful eye, attentive to the attraction, quickly picked out the wastebin substituting for a missing stanchion post. His movements (heading over to the attraction to get a closer look) and discourse (telling me he has seen the rope) are cues that enable observation alone to understand how far he is attuned to this environmental element. Conversations with the researcher add further insight, chiefly into the reason behind his move to action (“I asked him where he was going, and he answers that he’s going to look for a [post]”). A first analysis of the cognitive underpinnings of his action (replace the wastebin with a post) surfaces the problem perceived by the fact the wastebin is missing: people eating near the low wall have nowhere to throw their rubbish away. There is also evidence of another, visibly safety-related feature guiding his action (“what’s urgent is not the interview with Stéphanie, it’s getting the rope held stable with the banner; otherwise it creates a hazard for [customers]”). Is this conscious effectivity on the safety issue simply triggered by the unstable wastebin or is it a key structuring element guiding the way Léon routinely

engages his action at work? The interview borrowed from the interview to the double method delivers the answer by questioning Léon on the way the researcher needs to behave in practice to act like him (vignette #2).

This care and concern for safety is visible at other points in the interview to the double when questions touch on other actions, thereby revealing a recursive expression of this structuring cognitive underpinning that shows attentive attunement for people’s (customers and coworkers) physical safety (vignette #3).

Here, the interview borrowed from the interview to the double method on the shadowing work done serves to help understand that his care and concern for safety is not situation-specific (the unstable wastebin) but reflects a wider overarching concern for all the safety issues on the attractions he is responsible for. Léon’s past experience tells him that the unstable wastebin could be dangerous. This tacit knowledge has steadily grown over the course of many situations encountered and many years in the job as attractions manager. Mobilizing the SCl design thus helps to understand both the situated cognitive underpinnings (no wastebin for the people eating) and the structuring cognitive underpinnings (the unstable wastebin creates a hazard) of Léon’s action (replace the wastebin with a post).

Vignette #2 – Excerpt from the interview borrowed from the interview to the double method with Léon

Researcher: My question was when do I need to get outside and on the ground, but you actually gave me the answer – it’s if I don’t have any urgent emails, any...

Léon: Any meetings

Researcher: Any meetings, and if there’s some vital operational issue, then I go straight out to deal with it.

Léon: You’ve got it. There’s loads of things I’ve been able to sort out thanks to my experience, my years in the job, you need someone who can see things right through to the end. You saw, just earlier, that the [staff] they pretty much knew what I expected of them. OK, it’s a big day, so they needed to set up the queue line rope, and they found a [post]. But they used a wastebin at the end. Not something I would ever have done, for example.

Researcher: Why? Because...

Léon: Because I know what could happen, and more so because I cannot afford to expose anyone to a hazard, never; neither the [coworker], nor the customer, because the bin could topple and fall on someone’s foot. And if it falls onto someone, it could cut them badly. OK, so what did I do, straight away?

Researcher: Go look for the...

Léon: A [post]. I came back and replaced the [post].

Vignette #3 – Excerpt from the interview borrowed from the interview to the double method with Léon

Léon: “I keep on telling them – you don’t just stick to procedure, you can also think it through, realize there are 8 of us, we’re going to take 8 cars, only 4 are going to get in, the other 4 are going to leave their cars halfway there for those who have left to get on, so when they come back they won’t have to pass cars going out to pick people up but they can take the empty cars on the way – that way, everyone stays safe. That’s old-timer reflexes. That whole learning curve brought me here, to become manager, and it’s something that I’m going to pass on to them in everyday practice, something even he [coworker] has not yet managed to learn. So I can’t delegate everything down to [the coworker]. Plus we’re not on the same page, me and him. There’s loads of times where me, I’ll have that reflex – and, yeah, it really is a reflex – to keep everyone safe and sound. OK. I’ve got this young team leader who’s all about efficiency – because he doesn’t yet have that experience, so then I tell him ‘okay, you know right now, my priority is our people, not your job efficiency.’”

The excerpts from the TETRA fieldwork case (vignettes #4 and #5) also illustrate how the synergistic mobilization of the SCI design can surface a cognitive underpinning structuring the way the manager (Ludovic) manages interactions with his team members (namely by informally taking over an issue or organizing a meeting).

TETRA fieldwork case:

- A company operating in various markets, supplying integrated technology and engineering solutions (e.g., turnkey installation of transport-network payment systems);
- Manager observed: Ludovic, head of department, heading up a team of three project managers, four product managers, and one support-role manager.

In the following vignette, Ludovic is in a meeting that is about to close. Verbal dialogue aired during the meeting has enabled the researcher to understand that a problem situation had been discussed with the client (who had issued a change request that would likely mean moving the initial contract deadline). The meeting appears as scheduled in Ludovic's

day-planner; and the conversation with Ludovic informs on the reasons that prompted him to hold this meeting, namely that the project was urgent due to another meeting scheduled with the client later in the afternoon (vignette #4).

Vignette #4 reveals that it was the perceived urgency that prompted Ludovic to organize the meeting. Projects led by Ludovic's team members frequently run up against problems. However, we observed in the shadowing phase that Ludovic also deals with these kinds of problems informally, in corridors on his way between meetings, whereas he sometimes takes the time to hold a meeting to talk things through, as illustrated in vignette #4. Our first interpretative reading of these informal in-corridor talks is to address urgent questions. However, Ludovic connects the urgency factor to holding a meeting, not a quick informal briefing. Is the urgency factor voiced by Ludovic specific to the Caracas project or is it something that gives general structure to the way Ludovic manages his interactions with members of his team? To find out, we questioned Ludovic during the interview borrowed from the interview to the double method (vignette #5).

Vignette #4 – Excerpts from observations on Ludovic

Just as the meeting was set to close, I understand, practically through an aside, that he is the one who called this meeting (“...that’s why I asked for this meeting to happen today”). The meeting is now over. Ludovic goes back to his office. He goes straight to his computer and checks his email and his day-planner. He punches in a call on the office phone. Nobody takes the call. He leaves a message on the answerphone and sends an email asking for a copy of a document that will be talked over in a meeting at 4 p.m. this afternoon (this meeting is effectively scheduled in the day-planner). He heads off to the printer to pick up a document, then comes back into the office and starts talking with me about the points he sees as pivotal to any project: the budget, the deadlines, and the resources. He explains that his ideal scenario is a nice long deadline, a nice big budget, and fully available resources, but that in real life you have to make compromises and optimize the cost–time–resources triad. Any subsequent change to one of these three constraints (as was the case in the point argued during the previous meeting) can prove tricky to manage. He explains that the crux of the matter from the budget/cost perspective is to manage to produce more, in a different way, and on-time. I jump on this opportunity to ask Ludovic for further explanation to help me understand why he has called the meeting that had finished just minutes earlier. Ludovic then explains that, in the wake of a meeting he had with Jonathan (a member of his team) yesterday, he “set up” the meeting to settle a problem that had emerged in the project. He tells me the meeting that just ended is “an emergency meeting – it was set up pretty much overnight, as there’s a meeting scheduled for this afternoon in Caracas for negotiations with the customer, so it was vital to get decisions taken before we show up at this afternoon’s meeting in Caracas.”

Vignette #5 – Excerpt from the interview borrowed from interview to the double method with Ludovic

Researcher: Let’s say you’re in a meeting. The meeting comes to a close. You exit the meeting and, as is so often the case, you are ready to go straight into another meeting. Let’s imagine I’m in that same situation. I exit the meeting, and a project manager or someone else stops me to talk over a point, knowing that I’m already 5 min late for the next meeting. What am I supposed to do? Do I say I just don’t have time to chat, I’m off to a meeting, that other meeting I have? Do I take the time to have that talk? Do I...?

Ludovic: So the first thing I do is I ask him, I ask him how urgent it is, what he’s got to tell me. And depending on how urgent, I take it from there: either it’s urgent right now, or I ask him to book a slot, to go check my day-planner, see whether we can fit a meeting in to raise the issue, and that’s generally what happens, most of the time. So, urgency permitting, I generally ask for a scheduled meeting, because it’s not in those 30 seconds jumping between two meetings that you can manage things properly. That said, if it’s just a quick question, to ask “do I have to do this,” or “can I do that,” or “are you OK with me doing that”? If the answer’s a straight yes, no, OK, well you can manage it pretty quick.

Researcher: Or if it’s just a piece of info [information] or something like that?

Ludovic: Yes.

Researcher: OK.

The interview to the double reconfirms that problem urgency systematically underpins Ludovic's organization of meetings and is not specific to the observed Caracas-project problem. However, conversely to what were had initially suspected, the urgency trait that underpins Ludovic's organization of originally unscheduled meetings does not always underpin the informal briefs done between two meetings (that may be just for a quick question). In Ludovic's case, unlike in Léon's case, it is not so much his handling of prominent objects (like the post) that points the researcher toward a possible cognitive underpinning at work but more the recurring observation of patterns in the actions deployed (regular informal chats on the way between meetings).

These excerpts from the ATTRA and TETRA fieldwork settings illustrate cases where the interview borrowed from the interview to the double method emerges a cognitive underpinning of action as it unfolds *in situ*. This interview can also reveal an absence of structuring cognitive underpinnings where the researcher had suspected that one may be present, as illustrated in the example of Benoit, activity manager for CLIMA.

CLIMA fieldwork case:

- A smart building technologies and systems integrator, specialized in climate control engineering;
- Manager observed: Benoit, activities manager; heads a team of four people.

Benoit works in an open space shared with his team. He takes one of two coffee breaks a day, which he uses to hold informal chats with members of his team. At this juncture, shadowing enabled us to learn that even if the focus of conversation starts out in the personal sphere, it very often ends up moving into the professional sphere. We wanted a deeper understanding of how Benoit engages these coffee breaks and the behavior we would need to adopt if we had to stand in for him. In particular, we enquired whether Benoit used the coffee-breaks as an opportunity to progress certain matters and handle ongoing issues (where the informal chats would play a highly specific role, that is, to deal with quick questions, as is the case with Ludovic). This is where we used the interview borrowed from the interview to the double to stage the scene for Benoit (vignette #6).

The interview with Benoit reveals an absence of any cognitive underpinning structuring the way he manages interactions

around coffee with members of his team. Topics discussed emerge as conversation flows, without premeditation or orchestration from Benoit.

Discussion

Here we share our concrete thoughts on the SCI design implementation and its limits. We also discuss how the SCI design contributes to the observational methods traditionally mobilized for capturing cognition. We go on to present the value of synergistically intermeshing the three-component methods in the SCI design and its distinctive contribution for studying the cognitive underpinnings of action.

Hands-on implications and limits

In deployment of the SCI design, the actor being observed is aware they are being observed, but the people they encounter may not be – everything depends on the circumstances and on the way they want to introduce us to third parties. Depending on the cognitive underpinnings being studied and the preferences voiced by the people observed, the actors' insider knowledge of the research project and the observer's adopted role can sit along an overt-to-covert continuum, much like that proposed by Roulet et al. (2017).

The conversations take place throughout the whole shadowing phase. The hard part is to find the right moment to talk with the actor observed, that is, close to the action effectuated, but without disrupting how it gets performed. If you wait too long to ask questions, it creates a risk of accumulating questions and leaving the field with a list of unasked questions. The interview borrowed from the interview to the double method takes place after the shadowing fieldwork phase, which allows to pre-select which observation-work situations are helpful to stage for the actor. The recurrent action patterns picked up through shadowing can serve as material for further questions. If the interview to the double was staged ahead of the shadowing, it would surface the underpinnings structuring the action but would not help to understand how these structuring underpinnings articulate with situated ones according to the situation encountered (if the researcher has not yet observed the actions, their spectrum for enquiry into possible adjustments to the actions is narrower).

The shadowing mobilized in the SCI design ensures the researcher's attention does not get dispersed by focusing it

Vignette #6 – Excerpt from the interview borrowed from the interview to the double method with Benoit

Researcher: That means I show up with a mental list of questions that I know I'm going to ask the person on the coffee break with me?

Manager: No, no, it's on-the-fly, live, whatever happens. I don't go for a coffee thinking 'hey, this morning I'll go talk to whoever because I need to find out whatever. If that's the case, I skip coffee – I go to see them directly. And I tell him we've gotta check that, that, and that, it's urgent!

on following a single actor. This same tight observational lens also fosters more exhaustive note-taking on the actor-related cognitive underpinnings. Shadowing can dynamically track the dynamics of action. Even though the actor being observed may be less on-the-move at times (when in meetings or when completed desktop work in the office), the principle of the shadowing methods remains first and foremost to focus on the observee and stick with them even on short and small changes of place, rather than taking root in a single space to observe who comes into play.

The SCI design can be adapted to accommodate practical site-of-study constraints: typically by leaving a greater physical distance between observer and actor during the shadowing fieldwork if needed, and by adapting the number and length of conversations and interviews to the double. We have employed the SCI design to study the attentional processes underpinning managerial action, but it also lends itself to research into a host of other cognitive aspects, including decision-making and even memorization – both of which guide action and draw partly on selectively filtering information in the immediate environment (Styles, 2006). The SCI design is also mobilizable for various other research objectives related to action (studying a type of activity, a type of practice, and so on), to organizational actor cognition, or to the artifacts mobilized in organizational routines. It can be appropriately mobilized in *practice-based studies* (e.g., Jarzabkowski & Spee, 2009) in sociomateriality theory (e.g., Orlikowski, 2007) or in approaches addressing the concept of performativity (see, e.g., issue 20 of *M@n@gement* (Huault, Kärreman, Perret & Spicer, 2017) dedicated to these approaches). Furthermore, the SCI design hinges on a triad of methods that make it readily deployable across a broad spectrum of fieldwork settings.

The SCI design carries limits inherent to its component methods along with another limit that stems from the tight intermeshing of these methods. There are the limits inherent to most observational methods – that is, constraints like unity of place, unity of time, unity of actors, and unity of intrigue (Journé, 2005). There are also other issues tied to observation practice in general and the on-the-move shadowing in particular: feeling uneasy about being in the field, difficulty holding attention (Czarniawska, 2007), difficulty taking notes (and rereading them!) while walking around added to difficulty taking down exhaustive field notes when and while the action is quickly playing out (which can be mitigated by narrowing the scope of note-taking, for example to the managers' supervisory activity in research reported above). Another more SCI-design-specific limit is the time investment burden for the researcher, especially for rereading the shadowing-phase material as groundwork to prepare the interview borrowed from the interview to the double method.

Design for synergy-driven deployment, not for triangulation

The SCI design uses a specific and articulated triad of methods to reach past the limits typically encountered when scholars set out to study cognition using an observational method alone or added with other methods following a stacking logic. The SCI design stands apart by mobilizing observation in methodological synergy rather than the methodological triangulation typically found in management science work. The triangulation strategy involves stacking different methods together – including participant observation – to validate data that have already been collected or gain increased knowledge on the focal phenomenon under study. This strategy mobilizes the methods one by one, deploying them independently – which also decouples the data collected and added up. This decoupling plays out visibly in the study by Orvain (2014) on organizational *qui vive*, where the interviews were completed by an observation phase (but only involving a small subsample of the actors interviewed) and an informal conversation phase (taking place outside the observations, in meetings, or in the staffroom). The methods deployed in this study capture the action and the attentional underpinnings at work separately. The SCI design is grounded in a different strategy – a strategy based on synergistic articulation, which plays out visibly in the tightly intermeshed deployment of the methods. Shadowing and conversations are implemented in tandem and their deployment is tightly interlinked (shadowing can be reoriented in response to cues collected through conversations, conversations hinge on cues perceived through shadowing). Both the shadowing and the conversations inform how the interview borrowed from the interview to the double method is put together, and the groundwork to prepare the interview can reorient the conversations and shadowing work (rereading the shadowing notes may prompt the researcher to reorient his/her observation and/or questions asked in conversations). Intertwining the methods like this produces a fine-meshed methodological net that can capture both cognition and action together, at the same time. The SCI design resonates with Nicolini (2009) who advocated connecting the interview to the double method with another method like *in situ* observation. It helps researchers avoid looking for evidence of cognitive phenomena in data that were not collected for this purpose. For example, in MWB-oriented research, Noordegraaf (2000) did not realize that attention can make a pertinent analytical lens until he had already begun preliminary observations. He then readjusted the focus of analysis onto this feature but without a methodological design that had been thought out specifically to capture it.

A design for capturing both the situated and structuring cognitive underpinnings of action

The SCI design brings a fresh contribution to the synergistic designs outlined earlier. It serves to capture both the situated and the structuring cognitive aspects by coupling together two types of perspectives on action that other synergistic designs tend to keep apart. The first is retrospective – it can be found in the explicitation interview (Vermersch, 1994), in the self-confrontation interview (Theureau, 1992), in the crossed self-confrontation interview (Clot, 1999), and in the *subjective re-situ* interview (Rix & Biache, 2004). These interviews confront the actor with video-recorded traces of their past action. They “re-situate an experiential memory to get an explicit picture of the action effectively completed” (Rix & Biache, 2004, p. 384). The second perspective is forward-looking – it can be found in the interview to the double (Clot, 1995) where the actor stipulates what action to do, that is, to deploy by the researcher set to (fictitiously) stand-in for him. The actor’s discourse thus touches on the scope of possible scenarios: what needs to be done in a given situation, and why. The SCI design articulates two types of perspective by intermeshing shadowing, conversations and an interview borrowed from the interview to the double method: the actor is asked to re-experience situations encountered in the past and re-explain what their double should do in the future. It is this powerful articulation that, with great effect, captures both the situated underpinnings (deployed in the past – retrospective approach) and the underpinnings liable to reactivate in various future situations (prospective approach). This tandem articulation hinges on proactive mobilization of the observer–observee relationship: the researcher follows the actor closely through the shadowing fieldwork and systematically poses questions in order to register and understand the situations encountered and any potentially related patterns in action, and the researcher also stands in as double to the actor when conducting the interview borrowed from the the interview to the double method. Where the observer–observee relationship is a key component in situated action studies, the SCI design systematically mobilizes this relationship and the differences between researcher and practitioner as fertile sources of knowledge and understanding. This observer–observee relationship is neither erased by the neutral-ground video interaction, nor by the actor’s one-way discourse in certain forms of instructive talk (see, e.g., Gherardi, 1995). It also stands apart from studies that advance the minimal impact of the investigator as evidence of rigorously grounded quality research (see, e.g., Stigliani & Ravasi, 2012; Vie, 2010). By fully and systematically mobilizing the observer–observee relationship, the SCI design uncovers the ‘invisible’ features (Bidet, 2011) underpinning action, which enables stronger cohesion and consistency with the visible features. Commanding a sharp understanding of the underpinnings of action sets the stage for advancing beyond simply describing the action, which is a criticism often leveled at research

into managerial work behaviors, including the seminal study by Mintzberg (1973). For instance, if we pushed beyond simply describing the work practice of actors, and especially managers, as fragmented (Carlson, [1951]1991; Mintzberg, 1973; Stewart, [1967]1988; Wierdenius, 1958), it would emerge the processes underpinning this fragmentation.

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