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5 MODES OF KNOWING: VIDEO RESEARCH AND THE PROBLEM OF ELUSIVE
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7 KNOWLEDGES
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BIOS

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ABSTRACT

The current paper argues that video-based methodologies offer unique potential for multi-modal research applications. Multi-modal research, further, can respond to the problem of “elusive knowledges”, that is, tacit, aesthetic, and embodied aspects of organizational life that are difficult to articulate in traditional methodological paradigms. We argue that the multi-modal qualities of video, including but not limited to its visual properties, provide a scaffold for translating embodied, tacit and aesthetic knowledge into discursive and textual forms, enabling the representation of organizational knowledge through academic discourse. First, we outline the problem of representation by comparing different forms of elusive knowledge, framing this problem as one of cross-modal translation. Second, we describe how video’s unique affordances place it in an ideal position to address this problem. Third, we demonstrate how video-based solutions can contribute to research, providing examples both from the literature and from our own applied case work as models for video-based approaches. Finally, we discuss the implications and limitations of the proposed video approaches as a methodological support.

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Organizational scholars increasingly recognize the importance of forms of knowledge that are difficult to articulate explicitly in language (Ewenstein & Whyte, 2007a; Hakanson, 2007; Taylor, 2002). Such ‘elusive’ knowledges are key to organizational functioning, yet are difficult to replicate, thus providing a source of sustained organizational advantage (e.g. Berman, Down & Hill, 2002). While scholars struggle to convert elusive knowledges from lived experience into academic concepts (Jarzabkowski, Bednarek & Le, 2014), organizations also rely on mastering elusive knowledges to understand, develop and adapt their own processes (Islam, 2015a). Working from different traditions, scholars have framed elusive knowledges in diverse ways, from research on tacit forms of knowledge (Ambrosini & Browmann, 2001; Lam, 2000) to aesthetic approaches emphasizing sensory ways of knowing (Warren 2008; Taylor & Hanson, 2005) to embodied and practice-based knowledge that stresses the materiality of cognition (Cunliffe & Copeland, 2012; Carlile, 2002).

Each of these approaches recognizes the importance of non-linguistic knowledge in organizational life (Meyer, Hollerer, Jancsary & van Leeuwen, 2013). Increasingly, organizational scholars have noted these difficult-to-articulate aspects of organizational knowledge at the micro-level, where subtle nuances and tacit features abound (e.g. Seidl & Whittington, 2014; Ambrosini & Browman, 2001). Such approaches question how to move beyond formulaic descriptions of organizational life to describe organizing reflexively, questioning the degree to which operationalization can be successful. If knowledge is embedded in material practices (cf. Nicolini, 2012; Nicolini, Gheradi & Yanow, 2003), it may be both empirically manifested and yet difficult to put into words. For such forms of knowledge, speech is both practically difficult, where actors themselves struggle to find words to represent aesthetic, tacit, or embodied knowledge, and epistemically problematic, where scholars’ tools cannot fully represent elusive knowledges. The current paper focuses

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3 on how specific methodological tools can explore knowledge that is difficult to articulate
4
5 through verbal or textual accounts.
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8 Increasingly, organizational scholars are exploring video-based methods, valuing
9
10 video's ability to explore the interactions of humans with material settings, and to reveal
11
12 facets of non-verbal communication (Fele, 2012; LeBaron, 2005; Dant, 2004). By recording
13
14 facial expressions, habits, postures and gestures (Mondada, 2006), video seems to facilitate
15
16 access to the 'habitualized knowledge implicit in social action' (Knoblauch & Tuma,
17
18 2011:12), promoting reflexivity around automatized or underlying bases of organizational
19
20 action. This aspect has led scholars to use video in conjunction with interviews or
21
22 ethnography (Erickson, 2011; Pink, 2004; Heath; 2010). As elaborated in our review of
23
24 alternative uses of video in research, video offers a plurality of applications, from
25
26 complementing and supporting fieldwork, to stimulated recall or sense-making among
27
28 participants.
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32 For example, as Pink (2004) argues, integrating videos into interviews combines
33
34 visual and verbal knowledge, allowing interviewees to produce narratives while visually
35
36 making sense of situated knowledge. In this way, 'video becomes an agent in the process by
37
38 which knowledge is produced' (Pink, 2004:64).
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42 While video has been valued for representing bodies and fine-grained actions by
43
44 means of sequentially-linked images (e.g. Knoblauch & Schnettler, 2012), understanding how
45
46 video promotes reflexivity and taps into elusive knowledges (e.g. Heath, Hindmarsh & Luff,
47
48 2010) remains less explored. In particular, only scant research has explored the translation of
49
50 elusive knowledges from lived experiences into speech (e.g. during data collection) and text
51
52 (and ultimately, in published scholarship) during the research process, and how multimedia
53
54 tools such as video might facilitate this process.
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3 We argue that video can support this process through leveraging its unique
4 multimodal properties: its fusion of image, sound and movement. Beginning with the
5 methodological/epistemological problem of how elusive (i.e., embodied, tacit, aesthetic)
6 knowledges come to be studied in the first place, we explore how video assists researchers in
7 a.) Accessing knowledge through the direct use of video as a research tool, either alone or in
8 conjunction with other methods and b.) Promoting the articulation of elusive knowledge by
9 organizational members themselves, thus developing organizational awareness and
10 reflexivity. This dual motivation acknowledges that both researchers and organizational
11 members struggle to ascribe words to their experiences and actions (e.g. McDermott,
12 Gospodinoff, & Aron, 1978), and therefore producing discourse from embodied experience is
13 not only a scholarly, but also a practical, problem.
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27 This paper's contribution to organizational research methods is threefold. First, we
28 advance knowledge on video-based methods for data collection, using the concept of
29 multimodal affordances to show how three broad alternatives offer practical affordances for
30 articulating elusive knowledge. Second, we connect currently dispersed threads among
31 aesthetics, tacit knowledge, and embodiment literatures, by framing the articulability of
32 organizational knowledge as a common conceptual concern around 'elusive knowledges'.
33 Finally, we use video's multimodality to make inroads into the conceptual problem of
34 articulability, arguing that crossing modal barriers facilitates knowledge translation across
35 different modalities.
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47 Specifically, we suggest that video methodologies facilitate access to embodied
48 practical knowledge, not because video captures the 'real' of organizational life (cf. Jones
49 and LeBaron, 2002), but because it promotes cross-modal translations that can be productive
50 of new knowledge by promoting reflexivity. We propose that, in recording human actions,
51 video can act as a modal mediator between discourse and lived experience. Video-based
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3 methodologies provide a potential solution to an enduring dilemma: how to articulate in
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5 conceptual and abstract language knowledge which is immediate, embodied and aesthetic?
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7 Such articulation requires reflexivity around elusive knowledges, facilitated by working
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9 across modal boundaries.
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12 Our argument is structured as follows. First, we describe the methodological problems
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14 posed by ‘elusive knowledges’, linking these to articulability, and then arguing that they
15
16 share a common relation with multimodality. Then, we describe how video-based methods
17
18 complement traditional discursive approaches, providing avenues for accessing knowledge by
19
20 working across diverse modalities. After laying out this theoretical background, we illustrate
21
22 three models through which videos can be integrated into qualitative research. The final
23
24 section discusses the practical and epistemological issues raised by working across modalities
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26 in this way, with implications and future directions for video and, more generally, multimodal
27
28 research methods.
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31 32 BEYOND WORDS: TACIT, AESTHETIC AND EMBODIED FORMS OF ELUSIVE 33 34 KNOWLEDGE

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36 We term “elusive knowledges” those forms of knowledge that escape literal representation
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38 through discourse including alphanumeric symbols. While the term itself is new to
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40 organizational scholarship, it draws together existing strands emphasizing situatedness and
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42 embodiment, dispersed among tacit (Ambrosini & Bowmann, 2001; Lam, 2000), aesthetic
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44 (Warren, 2008; Taylor, 2002) and embodied knowledge (Kupers, 2013; Cunliffe and
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46 Coupland, 2012). Despite the overlap between these bodies of literature, each displays a
47
48 distinct historical and theoretical trajectory, shares a common preoccupation with how
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50 knowledge is encoded and expressed and has been confronted with the elusiveness of
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52 knowledge-in-practice (e.g. Orlikowski, 2010), that is, knowledge that is enacted in ongoing
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54 activity. It is of no surprise that each has been recognized as important to practice-based
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3 perspectives, nor is the close relationship of elusive knowledges with practice theories in
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5 organizations more generally surprising. We note this relation to practice perspectives and
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7 return to these in the discussion, although a full theoretical exploration of the issue is beyond
8
9 the scope of our methodological focus here.
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12 While mapping each of these distinct trajectories lies outside our current scope, we
13
14 focus on the common *methodological* challenge that these literatures have faced, the problem
15
16 of articulation. Our brief survey of each of these areas serves to foreground how this problem
17
18 has resurfaced, thereby suggesting a common concern around multimodality.
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21 In short, the unspeakability of beauty, the automaticity of habit and the visceral sense of
22
23 embodiment represent distinct epistemological issues involving representation; however, they
24
25 pose similar methodological difficulties regarding the production of scholarly knowledge and
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27 text out of the flux of “life as the experience of thrownness” (Weick, 2004, p.659). Central to,
28
29 but not exclusive to, organizational practices perspectives (e.g. Nicolini, 2012), tacit,
30
31 aesthetic and embodied knowledges are analytically distinct concepts, though they co-
32
33 contribute to the elusive aspect of lived experience, and they may combine in practice. While
34
35 organizational practices situate and deploy elusive knowledge (Nicolini et al, 2003), the
36
37 concept is difficult to pin down. Indeed, except for a few contributions (e.g. Jarzabkowski,
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39 Bednarek & Le, 2014; Koschmann and LeBaron, 2002; Ambrosini & Browman, 2001), there
40
41 is little academic research on how such knowledges are represented.
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46 Bringing knowledge into articulability is a process that is accomplished interactionally
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48 (Koschmann and LeBaron, 2002), where material and social contexts act as resources that
49
50 enable embodied knowledge to be articulated. Material environments provide communicative
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52 resources, located in people’s verbal and non-verbal interactions, such that jointly studying
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54 verbal and non-verbal messages is key for insight into human action (Jones & LeBaron,
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56 2002).
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3 The idea that representing action involves both verbal and non-verbal expression (Jones
4 & LeBaron, 2002) suggests, furthermore, that interactive processes occur multimodally
5 (Koschmann and LeBaron, 2002). Articulation into verbal expression is one possible way to
6 represent knowledge; however, diverse modes – such as gestures, body movements, images
7 or drawings – provide opportunities to complement speech or verbal communication,
8 representing diverse possibilities for representation. Combining diverse modalities informs
9 the research process, insofar as multimodality depicts how the material environment, bodies
10 and gestures are integrated with conversational interactions. Thus, to grasp multidimensional
11 interaction, multimodality becomes crucial. By presenting different forms of knowledge –
12 embodied, aesthetic, tacit – in diverse ways, a space of reflexivity can facilitate the passage
13 from elusive knowledge to articulability.
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16 The tacit knowledge literature (Shamsie & Mannor, 2012; Hakanson, 2007; Tsoukas,
17 2003) has explicitly noted this focus on ‘articulation’. Polanyi (1962), and later Nelson and
18 Winter (1982) contrasted tacit knowledge with knowledge that is expressed. Knowledge can
19 be tacit because it escapes conscious awareness, and yet it is internalised and expressed in
20 practices (e.g. Collins, 2007). Tacit knowledge, an individual and collective resource
21 impacting on performance (Shamsie & Mannor, 2012; Berman, Down & Hill, 2002), is
22 particularly useful for studying the micro-interactions that give rise to individual and
23 collective performance (e.g. Fele, 2012; Hindmarsh & Pilnick, 2007; Koschmann & LeBaron,
24 2002).
25

26
27 As Ambrosini & Browmann (2001) emphasize, tacit knowledge is both critical to
28 organizational functioning and strategic advantage, as well as being notoriously difficult to
29 operationalize or measure. Polanyi (1962: 4) describes articulation as mobilizing speech and
30 other symbolic forms, arguing that “language is the instrument for articulation”, yet that “we
31 can know more than we can tell” (p.80). Similarly, Hakanson (2007:61) defined articulation
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3 as “the process of expressing tacit knowledge into some socially shared code or symbolic
4 representation – in the simplest case, ordinary natural language”. Tacit knowledge scholars
5 have acknowledged that making tacit knowledge explicit involves a process of transformation
6 (e.g. Nonaka & Krough, 2009), although differences of opinion exist as to the extent to which
7 the conversion to explicit knowledge is possible (cf. Donaldson, 2001). Some research
8 emphasizes video’s ability to access moments of articulation in microethnographic methods
9 (e.g. LeBaron, 2005), for instance, as actors attempt to understand each other in emergency
10 operator interactions (Fele, 2012), or as medical students come to articulate problem-based
11 knowledge (Koschmann & LeBaron, 2002). Video methods therefore seem particularly suited
12 to exploring tacit knowledge in organizations.
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15
16 While tacit knowledge represents knowledge that is elusive due to its embeddedness
17 in practices and routines (Collins, 2007), aesthetic knowledge involves the “felt meanings”
18 (Warren, 2008) of organizational environments, including sensory knowledge and judgments
19 of beauty or ugliness (Taylor & Hanson, 2005; Strati & Montoux, 2002; Strati, 1992).
20 Aesthetic knowledge, or judgments of “taste”, develop from sensory intuitions into
21 judgments of form that become linked to aesthetic pleasure/displeasure (Gagliardi, 1996;
22 Strati, 1992). Aesthetic judgments involve both subjective intuitions and normative force
23 (Martin, 2002), marked by both personal connection and an implicit suggestion that they can
24 be generalized (Kant, 1789/1911). From this arises the idea that “taste cannot be discussed”,
25 although organizational processes frequently depend on creating shared aesthetic visions, and
26 discussing taste is both common and often essential to organizational functioning (Endrissat
27 et al, 2016). Such communication is instrumental to organizational performance, particularly
28 around team dynamics (Yaniv, Choshen-Hillel, & Milyavsky, 2010), design processes
29 (Endrissat et al, 2016) and organizational culture and power dynamics (Wasserman &
30 Frankel, 2011). Such processes have been scrutinized in craft studies of flute makers (Cook &
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3 Yanow, 1993), perfumers (Islam et al, 2015) and restaurant chefs (Fine, 1992), among others.
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5 In each of these cases, special forms of communication and socialization are necessary to
6
7 transmit this type of knowledge.
8

9
10 The importance of articulating and coordinating aesthetic knowledge sits
11
12 uncomfortably alongside the idea that that aesthetics requires bracketing analysis and “being
13
14 in the present moment” (Taylor, 2013:31). As Taylor and Hanson (2005) argue, discursive
15
16 representations require a division into the signifier and signified, in contrast to the holism and
17
18 unity of aesthetic experience, leading to difficulty when articulating aesthetic experience in
19
20 organizations, a problem known as “aesthetic muteness” (Taylor, 2002). This difficulty of
21
22 discussing aesthetic knowledge creates deep methodological problems (Warren, 2008), and is
23
24 not only an issue for organizational members but also for observers. Such difficulties include
25
26 the impossibility of breaking holistic experiences into measurable units, the necessity of
27
28 using “elusive, poetic language” (Gagliardi, 1996: 576) to access aesthetic experience and the
29
30 importance of researcher empathy in aesthetic matters. Recent applications of aesthetic
31
32 approaches to deal with epistemic and other “objects” in organizations (Ewenstein & Whyte,
33
34 2007b), acknowledge the importance of cross-modal issues and material artefacts when
35
36 studying aesthetic knowledge. Ewenstein & Whyte’s (2007b) study of visual objects in
37
38 architectural design illustrates how the aesthetic is embodied in tools, such as videos or other
39
40 research instruments that mediate action. Following this conception, videos combine
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42 properties of technical and aesthetic objects, storing and transmitting knowledge while
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44 creating a material context wherein actions are made sensible and intelligible. Such studies
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46 suggest that video can be a key tool in exploring aesthetic aspects of organizing.
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52 While both tacit and aesthetic knowledges are deeply embodied, the notion of
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54 embodied cognition is analytically important in its own right. Embodied cognitive
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56 perspectives (e.g. Clarke and Cornelissen, 2011; Mitchell & Mitchell, 2011; Sutton, 2006)
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3 stress that knowledge is largely dependent on a material scaffold, including bodily
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5 orientations and analogy, as well as being dependent on tools and artefacts, physical spaces
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7 and interactional systems (Smith & Semin, 2004; Shore, 1996). Individuals and collectives
8
9 use these structures to “lean on the world” (Smith & Semin, 2004), framing cognition as
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11 structured around both internal bodily and external material structures (Islam, 2015b; Sutton,
12
13 2006). Embodiment perspectives vary in their focus on the body as a locus of
14
15 “internalization” or a horizon for lived experience (e.g. Cregan, 2006), and the ‘external’
16
17 embodiment of knowledge in technologies, tools and environments (e.g. Hutchins, 1995).
18
19 Both perspectives stress that capturing the *materiality* of thought, rather than simply its
20
21 content or meaning, is fundamental to understanding knowing as a situated phenomenon
22
23 (Smith & Semin, 2004).
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27 Embodied knowledge is an important resource in understanding organizational
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29 functioning, particularly around the ways in which bodies act so as to provide a resource for
30
31 knowing and transmitting knowledge (e.g. Hindmarsh & Pilnick, 2007). Embodied
32
33 knowledge has appeared in a plethora of diverse organizational approaches, and it is linked to
34
35 organizational sensemaking processes (Kupers, 2013; Cunliffe & Couplan, 2012), leadership
36
37 (Ladkin & Taylor) and organizational diversity (Thanem, 2006) processes. Techniques
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39 allowing researchers to explore embodiment, accessing both bodily expression and the
40
41 material supports for knowing, would thus be useful to these literatures. This suggests that
42
43 video would be well suited for studying embodied organizational knowledge.
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46
47 Tacit, aesthetic and embodiment perspectives illustrate the varied challenges that
48
49 researchers face around elusive knowledges. The unspoken side of internalized knowledge
50
51 (tacit), the ineffable nature of judgements of taste, beauty and appropriateness (aesthetic) and
52
53 the implicit embodied metaphors (Lakoff and Johnson, 1980) that underlie much of cognition
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55 (embodied) together relegate a large part of experience to being opaque to articulation,
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3 begging the question of how researchers can theorize such phenomena using a variety of
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5 methods while doing justice to lived forms of knowledge.
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8 It thus becomes vital to develop representational strategies to articulate aesthetic and
9
10 embodied experiences, while avoiding what Melcher & Schooler (1996) term ‘verbal
11
12 overshadowing’, where verbal representation dominates and occludes lived experience. In
13
14 analysing the case of wine tasting, where sensory and perceptual experiences – such as taste
15
16 and olfaction – are fundamental, Melcher & Schooler (1996) show that verbalization
17
18 regarding smell or taste memory, together with the difficulty of describing these perceptual
19
20 experiences, limit one’s ability to fully appreciate the complexity of experience. This
21
22 provides a methodological warning and a call to protect the perceptual texture and richness of
23
24 elusive knowledge. Below, we argue that, through its multimodal features, video can offer
25
26 opportunities to explain and articulate elusive knowledges.
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29 RESEARCH, TEXTUALITY, AND TRANSLATING ACROSS MODALITIES

30
31 Translating lived experience into discursive and textual communications is central to
32
33 organizational research, given that written texts are the primary means and product of our
34
35 research projects (cf. Jazarbkowski et al, 2014). Research relies largely on the use of speech
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37 (e.g. interviews and conversations) and texts (e.g. archival and other written material) as the
38
39 primary means of investigation, as these take advantage of natural language’s ability to
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41 abstract and generalise (e.g. MacDougall, 2011), making discourse “theory-friendly”.
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43 Nevertheless, discursive accounts may be limited in their ability to describe tacit aspects of
44
45 actions, involving practical knowledge in embodied routines and directly pertaining to
46
47 aesthetic experiences that are only imperfectly articulable. The situation of translating elusive
48
49 knowledge into research thus involves “both rescue and irretrievable loss—a kind of death in
50
51 life – in the making of texts from events” (Clifford, 1986; 115).
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3 The limits of discursive accounts to represent experiences is thus an important
4 methodological issue. Aesthetic muteness leads to difficulty translating experiences through
5 traditional methods and tools – such as interviewing techniques, content analysis and the like,
6 blocking the translation of ‘feeling’ into ‘thinking’ (Taylor, 2002). Aesthetic muteness is
7 particularly acute in organizations because such knowledge may be considered illegitimate or
8 without value within business organizations specifically (Taylor, 2002). One effect of
9 muteness could be the inability to generate accounts from organizational members by asking
10 them merely to describe their experiences and knowledge through verbal communication.
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21 The difficulty in the translation from elusive knowledge into articulability is twofold.
22 First, there is the difficulty of articulating organizational members’ elusive knowledge by
23 researchers; researchers may need to record and combine different sources of information,
24 using videos to provide a support in this endeavour. The second difficulty concerns
25 organizational members themselves, in terms of their difficulty in articulating their own tacit
26 or elusive knowledge in verbal form. Organizational members may know ‘*how to do*’ specific
27 actions, but not necessarily how to translate a holistic experience into words. This may be
28 true when knowledge is internalized, embodied in habits, routines or skills, and can be
29 translated into language only at the expenses of a loss of richness (Hakanson, 2007).
30 Similarly, with embodied and aesthetic experiences, the issue arises of how the ‘felt sense’
31 can be made understandable (Taylor, 2002). In these circumstances, researchers can facilitate
32 articulation, for example, by creating a critical distance between members and their actions,
33 objectifying these actions on video. The medium of video thus becomes a material support,
34 mediating between the unarticulated embodied knowledge of organizational members, their
35 articulation of this knowledge and the researchers’ activity.
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53 Such material supports function because of their modal affordances (e.g. Demir,
54 2015), as we elaborate below. The problem of articulation is, in part, the problem that elusive
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3 knowledge involves different modalities of expression from the discursive representations
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5 that seek to communicate them. Subjective realities are ‘packaged’ and made understandable
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7 according to sensory modalities that afford different bases for experience and
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9 conceptualization (e.g. Islam et al, 2015). Video, in combining different modalities such as
10
11 images, sounds, texts, becomes relevant in this context.
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13

14 Video, as a *conjunction* of different modalities, integrates diverse communicative
15
16 resources multimodally (e.g. Mondada, 2006). By recording sounds, bodies and movements,
17
18 video captures gestures, facial expression, social interaction and embodied actions, providing
19
20 tacit and embodied aspects of knowledge for later analysis. Researchers can appreciate
21
22 embodied knowledge, for example, both by the direct analysis of multimodal data or by using
23
24 multimodal data as a stimulus to invoke participant reflexivity (cf. Mondada, 2006). If
25
26 multiple modalities facilitate the integration of diverse modes of expression, it becomes
27
28 crucial to understand how research methods can bridge different modalities of experience and
29
30 elicit knowledges.
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33
34 The concept of multimodality stems from the idea that experience is synergistically
35
36 composed of different sensory modalities which can be separated through analysis, but
37
38 coexist in a field of experience (Pink, 2011). Different modalities of experience (e.g.
39
40 movement, texture, temperature, tone) realize different potential meanings and forms of
41
42 representation (Stivers and Sidnell, 2005). As observed by Price, Jewitt and Brown (2013)
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44 meaning arises within multimodal representations, from the unique contributions of each
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46 modality as it is enmeshed with the others. Writing, images, sound, speech, posture,
47
48 embodied interaction and the like each “afford” different possibilities for the expression of
49
50 meanings. The affordance notion (Gibson, 1986) has recently been used to describe human
51
52 interaction from a materiality perspective (Demir, 2015; Jarzabkowski & Pinch, 2013).
53
54
55
56 When applied to communication and representation, ‘modal affordances’ are used to explain
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1
2
3 ‘what is possible to express and represent in a mode’ (Bezemer and Jewitt, 2010: p. 6).

4
5 Possibilities of representations presented by a particular mode can be explained through these
6
7 affordances, which emerge from the material properties of the medium in a given action
8
9 situation (Gibson, 1986).

10
11 Framing the question of articulability through multimodality recognizes that elusive
12
13 knowledges resist theorization, in part, because the affordances of written and spoken
14
15 language may not easily represent experiences lived under diverse modalities. While not
16
17 completely “mute” (Taylor, 2002), participants’ speech and researchers’ texts represent such
18
19 knowledge only with great difficulty. This is not to say that discourse is useless for elusive
20
21 knowledges, but that invoking other modalities within the research process may facilitate or
22
23 augment the awkwardness of discourse, allowing it to more closely approximate the lived
24
25 conditions of research participants. Recent work has given credence to the idea that
26
27 individuals work not only within modalities but across modalities to achieve a collective
28
29 outcome. For instance, Jarzabkowski, Burke & Spree (2015) demonstrated how speech
30
31 works together with material artefacts in strategic coordination. Islam et al (2015) showed
32
33 how design teams relied on visual artefacts to design scent products, using visual affordances
34
35 where scent-knowledge proved difficult to codify. Demir (2015) demonstrates how ‘bundled’
36
37 affordances complement each other in strategic events. In each case, action is achieved by
38
39 working across the affordances of each modality, suggesting the importance of harnessing
40
41 multimodal affordances in organizational activities. Methods that capture the multimodal
42
43 affordances of data promote access to these aspects of organizational life.

44
45 Multimodal affordances describe the potentialities or constraints of different modes –
46
47 what it is possible to represent in a straightforward way with a given mode, and what is
48
49 difficult or even impossible to represent, possibilities that depend both on material properties
50
51 and social action around a given medium (Price et al, 2013). Multimodal affordances signal
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3 that information is materially anchored, and that modes of presentation matter (Streeck et al.,
4
5 2011). For example, the textual or discursive mode may impose a flow-like structure on
6
7 phenomena as it ‘describes the linear progression of discursive objects in a narrative form’
8
9 (Saussure, 1974). Written texts embody structural elements of knowledge sequentially, where
10
11 language unfolds diachronically to reveal unfolding discursive elements (McCanles 1982).
12
13 The logic of sequence in time is therefore crucial in texts, and the mode of writing offers
14
15 potential for modes of representation that are linear in nature (Bezemer and Jewitt, 2010). By
16
17 contrast, visual images are synchronic, freezing a set of related visual elements in a
18
19 “paradigmatic” relation or snapshot in frozen time (Barthes, 1982). Visual language has its
20
21 peculiar form of communication, and it is valued for its immediacy and ability to convey
22
23 information holistically, in contrast to the linearity and sequentiality of verbal language
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25 (Meyer, et al., 2013).
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29
30 It follows from this that images and textual accounts can both be used to perform the
31
32 same ‘fundamental systems of meaning’; however, each can provide access to different
33
34 knowledge, whether independently or in a multimodal combination (Meyer et al, 2013: 4).
35
36 Importantly, video involves both a diachronic flow and a synchronic structure, being both
37
38 temporally extended and composed of visual images, and thereby providing a crucible for
39
40 cross-modal translations of meaning.
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44 Video takes advantage of the fact that different modal combinations offer unique
45
46 insights into lived experiences. Cross-modal studies have shown how multimodality in
47
48 interview techniques (telephone versus face-to-face modalities; Silvester, Anderson,
49
50 Haddleton Cunningham-Snell & Gibb, 2000), and in representing affective relations (visual
51
52 versus olfactory modalities; Islam et al., 2015) can provide a more holistic understanding of
53
54 an object of study, articulating tacit knowledge by triangulating across modalities. Because
55
56 video can provide both synchronic, image-based understandings and diachronic, narrative
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3 unfoldings of events (cf. Mondada, 2012), it can illustrate both organizational processes and
4 structures. As a visual depiction, video encodes the complex aesthetic and embodied relations
5 within practices and interactions, revealing more than words alone. Yet, by recording
6 participant interaction over time, video captures temporally-extended, unfolding actions that
7 allow translation into a written narrative.
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13 VIDEO-BASED METHODS

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16 Video-based methodologies have been receiving growing scholarly interest (e.g. Luff &
17 Heath, 2012; Knoblauch & Schnettler, 2012), and growing recognition of video's relevance
18 in studying social behaviour (Fiele, 2012; Knoblauch, H. & Schnettler, 2012; Gylfe et al.,
19 2016). As illustrated by Dant (2004), video can reveal shared social worlds, constituted by
20 everyday embodied knowledge that is contained within the relatively unconscious, ordinary
21 "ways of doing things" (Dant, 2004, p. 43). Similarly, microethnographic perspectives have
22 emphasised the use of video in representing tacit and non-verbal behaviours (e.g. Streeck &
23 Mehus, 2005; LeBaron, 2005). This work acknowledges the aesthetic and embodied
24 possibilities of sensory methodologies, while focussing less on the catalytic function of
25 alternative methods for bridging diverse modes of knowledge.
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39 Video-based methods can address the problem of elusive knowledges through video's
40 unique multimodal affordances, as deployed in diverse ways in the research process. As
41 argued above, multimodality opens up reflexive spaces by allowing comparison between
42 modes, rendering visible phenomena that are opaque to a single mode. Underlying meaning
43 systems are constituted between modalities that are enmeshed in a holistic interaction
44 situation (Pink, 2011). Accessing these interstitial spaces between modalities is a strategy for
45 reflecting on the meaning of such situations.
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54 In addition, because the problem of elusive knowledge is a problem both of researcher
55 access to participant experience and of participants' reflection on their own embodied
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3 experience, video-based methods allow different forms of reflexive work in articulating
4
5 knowledge. Because video is internally multimodal, such work may be done via the medium
6
7 of video; however, modal comparison may also work externally by comparing video with
8
9 other data sources whose modalities are not captured by video. Thus, taking account the
10
11 agent of reflection (researcher and participant) and the source of modal comparison (internal
12
13 to video and triangulation with other sources) provides an array of distinct possibilities for
14
15 reflexive work around elusive knowledges via video.
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17

18 ALTERNATIVE USES OF VIDEO IN RESEARCH

19
20 Below, we describe three approaches to exploring different aspects of elusive knowledges via
21
22 video. Each approach configures, in distinct ways, the relationship between researcher,
23
24 participant and practice, such that cross-modality offers different possibilities for each type.
25
26 We present the components, constraints and possibilities of each model, showing how each
27
28 model addresses a particular type of research problem. Table 1 summarizes the main features
29
30 of each of these approaches.
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Table 1 about here

To illustrate how these models of analysis would work in practice, we provide a real-world example of a video-based study carried out by the second author (Islam & Benameur, 2016). The study concerned collective cognition and tacit knowledge in a professional volleyball team, where video was used extensively in conjunction with other methods for data collection. In using a professional sports case to illustrate micro-organizational phenomena, we follow on recent uses of sports teams in the organizational literature (e.g. Lok & deRond, 2013), and particularly around tacit knowledge (Shamsie & Manor, 2012; Berman et al, 2002). As Wolfe et al (2005) argue, sports organizations provide ideal settings for

1
2
3 organizational studies, “mirroring” the world of work in ways that are observable, dynamic
4
5 and vivid. We use this example as a common thread running through the three cases in order
6
7 to examine how the data may be approached differently depending on the approach, or used
8
9 collaboratively to reach different aspects of the field.
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11 *Video as raw data.* The most common use of video is as a source of raw data (Jewitt, 2013).

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13
14 Video is used to represent real-time behaviours by actors, as well as to represent social
15
16 interactions (Knoblauch, 2012), to document tacit and explicit phenomena that are difficult to
17
18 capture with texts or interviews (Fele, 2012), and to access ‘naturally-occurring’ aspects of
19
20 social phenomena (Mondada, 2012). Video data provide rich material for subsequent
21
22 qualitative coding, while freeing the researcher’s attention for other data collecting activities.
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24 Because of this plethora of uses, video-based approaches have become a popular and
25
26 recommended form of data collection (Heath, Hindmarsh and Luff, 2010; Mondada, 2006).
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30 From the perspective of cross-modality, video data offer not only a new modality of
31
32 data, but are themselves multimodal (Mondada, 2006). Video data involve different modes of
33
34 presentation, integrating image, movements and facial expressions, all unfolding
35
36 contiguously over time. The versatility of this combination allows researchers to explore
37
38 elusive features of social interaction revealed by modal interactions in a particular situated
39
40 action. Such interactions are complex mixtures of speech, gesture and tool use and thus
41
42 demand research instruments that are able to detect these elements in their co-occurrence. By
43
44 comparing insights across modalities, insights can be gleaned from the complementary
45
46 affordances of each modality, insights that would be elusive under a single modality under
47
48 traditional content-based coding (e.g. St. Pierre & Jackson, 2014).
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51
52 To illustrate using the above mentioned sports project, tacit knowledge and
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54 communication were embedded in seconds-long episodes of play, moments difficult to
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56 describe in words alone. Indeed, even if players, as interviewees, had clear cognitive schemas
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3 of their play episodes, translating this embodied cognition into language via post hoc
4 interviews would be difficult and methodologically problematic. By videoing these episodes
5 directly, we noted patterns in individual and collective action, such as who interacts with
6 whom and in what form (language, gesture, proximity), as well as how such patterns evolve
7 over time.
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14 Figure 1 illustrates a short action sequence taken from one of the videos. Temporal
15 and audio elements are missing from the illustration, but some basic interactional elements
16 are nevertheless present. For example, as the two players lunge for the ball in the first
17 instant, a tacit division of labour is established, with each player subsequently falling back
18 into pre-established positions. While the 'system' of pre-established positions was openly
19 articulated in interviews, the 'elusive' instantaneous breaking and re-establishing of order
20 would have been difficult to access without video. Parallel to this, eye movements turn from
21 opponents to each other, then to the ball, implying a collective coordination though object-
22 anchoring material supports. This is a coordination that is not consciously registered by the
23 participants (at least during the interviews), but is nevertheless easily identifiable from the
24 video. This situation, which was a routine play, was contrasted with more 'crisis' type
25 situations, with distinctly identifiable attentional, gestural and vocal elements.
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43 Figure 1 about here
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48 Data of this sort, providing temporal flow, sound and image, offer analytical supports
49 that would otherwise be unavailable through discursive techniques. The direction of a gaze,
50 the intonation of voices, postures, type of gestures and bodily movement all widen the types
51 of semiotic resources available to interpret material contexts. By being naturally cross-modal,
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3 video supports reflection on the material nature of representations, facilitating the study of
4
5 elusive knowledges.
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7 In this sense, video could be described as a ‘multimodal ensemble’ (Price et al, 2013),
8
9 where ‘several modes are involved in a communicative event and all of these modes combine
10
11 to represent a message’s meaning’. The valuable aspect of multimodal ensembles is that each
12
13 mode performs a distinct, yet complementary, display of meaning. Although each mode
14
15 offers a certain range of modal affordances, multimodal ensembles allow for distributing
16
17 meaning across diverse modes and therefore demonstrating different aspects of the material
18
19 environment.
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22 Nonetheless, treating video as raw data may have drawbacks, the foremost being the
23
24 ‘illusion of objectivity’ generated by using video. The act of recording implies choosing a
25
26 point of observation (e.g. LeBaron, 2005); the invisible point of the camera gaze, not brought
27
28 into evidence at this level of analysis, risks obscuring the production choices made in filming.
29
30 Relatedly, video captures a limited horizon within their gaze, recording partial slices of the
31
32 ‘reality’ sampled while offering an illusion of objectivity. In the volleyball example, this
33
34 aspect may be less evident due to the highly-circumscribed nature of the action within an
35
36 official rectangle. Nevertheless, choices of where and when to film may be paramount, and
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38 should be acknowledged by the researcher.
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42 Moreover, video as raw data has the limitation of not including organizational
43
44 members’ first-hand interpretations of their experiences as data. Their actions, movement and
45
46 behaviour are interpreted by the researcher from a purely third-person perspective. As the
47
48 example of volleyball players shows, when they reflect on their unfolding actions, they do
49
50 provide an interpretation and it is not purely third-person.
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53 The reflexivity gained is one of modal comparison, aiding interpretation through
54
55 multimodality. The limitations of video as a modal ensemble, and those of the unique point of
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3 view of the camera and researcher, remain important issues. Thus, researchers may wish to
4
5 combine video with other data sources, as described below.

6
7 *Video as triangulation.* The second approach uses video in conjunction with other data forms
8
9 to compare, extend and cross-verify data sources. Part of a multi-pronged strategy of data
10
11 collection, the goal of triangulation (e.g. Jick, 1979) presumes that a.) Different sources of
12
13 data provide unique insights into organizational phenomena and b.) Despite these differences,
14
15 sufficient commensurability exists between sources to use these sources together to build a
16
17 coherent, empirical story.
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21 The first premise around diverse affordances is based on compensating for the
22
23 partiality of each modality through a plurality of modalities. The second premise assumes that
24
25 different modalities, although ontologically different (i.e. it is impossible to faithfully
26
27 translate an image into a sound, a movement into a sentence, etc.), possess sufficient
28
29 *structural similarity* to illuminate an underlying structural relation. Because finding
30
31 commonalities requires abstraction and searching for underlying structures characterizing
32
33 phenomena, cross-modal triangulation across sources can supplement video analysis to
34
35 support theory-building. Particularly where knowledge is tacit, triangulation can help infer
36
37 relations that are less accessible directly.
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41 Returning to the illustrative example, volleyball team videos were used to greater effect
42
43 when combined with other data types. For instance, player interviews (detailed in approach
44
45 three), participant observation by one of the authors (a professional trainer), non-obtrusive
46
47 observation and archived player statistics and historical data were all used as factors in
48
49 understanding the ongoing set of tacit practices that we considered to be an elusive form of
50
51 knowledge. The collective knowledge enacted on court, although elusive and embodied in
52
53 rapid moments of intuitive action, had roots in a longer history, which was explored by
54
55 triangulating data sources. Why a player would choose one teammate over another one for a
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3 pass, or why one would become flustered or annoyed at a certain juncture in the game,
4
5 resulted from chains of events occurring in other games, in practice and off the court. While
6
7 the materiality of practices thus required modalities that were able to grasp the presence of
8
9 action, any interpretation required triangulation across modalities to show different temporal
10
11 scales and contexts of information.
12
13

14 In Figure 2, we illustrate three different modes in which the chain of decisions within a
15
16 given play unfolds. Comparing the video sequence with a schematic sketch drawn by the
17
18 researcher to summarize each play, and compared with an interview with the player about
19
20 how, in general, decisions are taken (i.e. chain or circle? Who decides which actions?) thus
21
22 allows three different perspectives on the same action situation.
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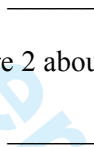
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Figure 2 about here

32 Triangulation thus offers both a form of verification across modalities, and of
33
34 extension beyond a given modality. Video data can build on emerging categories from
35
36 interviews, observations, field notes and other techniques. As a verification tool, triangulation
37
38 can be used to establish cross-source consensus. As an extension of findings, other data
39
40 sources (such as interviews) can be contextualised along with video data and the
41
42 interpretation of one source of data can be aided by the other, which is particularly beneficial
43
44 where knowledge is elusive and difficult to articulate.
45
46

47 Conversely, constraints associated with triangulation involve the possible
48
49 incommensurability between different modalities. While modal differences create the
50
51 possibility for reflexive cross-modal insights, incommensurability shuts off the translation of
52
53 insights across modes, or the possibility for structural inference at a higher level of
54
55 abstraction. Incommensurability creates interpretive difficulties in cases of disagreement
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3 between diverse data sources. Legitimate variations among different modalities, however, can
4
5 generate discrepancies among data without necessarily indicating a lack of validity. The
6
7 meanings of convergence and deference across modalities, thus, cannot be taken for granted,
8
9 and may vary across cases.
10

11 *Video as reflective artefact.* The previous two approaches framed articulating elusive
12
13 knowledges around reflexivity deriving from multimodal affordances. Comparison across
14
15 modalities opens a kind of ‘second-order’ abstraction of concepts across sensory
16
17 representations. Both approaches located reflexivity in the analyst; that is, researchers gain
18
19 spaces of analysis by working across media, thereby increasing their own understandings of
20
21 data.
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25 A third approach places reflexivity in participants’ and in researcher-participant
26
27 exchanges, using video to promote participant reflection on individual and collective actions.
28
29 Video is used here to facilitate the articulation of organizational actors’ internalised
30
31 knowledge by constructing, remembering and articulating experiences. As an ‘artefact’, video
32
33 provides opportunities to study the situated nature of actions (Suchman & Trigg, 1991).
34
35 Video is used to promote sensemaking around embodied actions, where members reflect on
36
37 the meanings of what they are doing on the screen. Some contemporary methods, such as
38
39 video elicitation (e.g. Henry & Fetters, 2012; Jarrett & Lui, forthcoming) and stimulated
40
41 recall methods (Dempsey, 2010) use stimuli to elicit participant memories, for instance by
42
43 watching their own recorded actions. Video serves as a mnemonic device to explain and
44
45 elaborate memories; other uses focus more on sensemaking, creative storytelling or joint
46
47 theorizing around the meaning of events. In this sense, such methods may resemble
48
49 ‘shadowing’ (McDonald & Simpson, 2014) techniques, where shadowed participants provide
50
51 running commentaries around their own actions. Showing videos to actors while interviewing
52
53 them enables researchers to simultaneously investigate their intentions and experiences while
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3 directly weighing these against observed practices without interruption. Furthermore, in
4
5 situations where knowledge is embodied, looking at videos can help to bring this elusive
6
7 knowledge to articulation.
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10 Using video as a reflective artefact offers organizational members the opportunity to
11
12 engage in discursive work around elusive knowledges, translating and transforming
13
14 knowledge in the process. Rather than ‘capturing’ elusive knowledges, such work recasts
15
16 them in the mode of observation and reflection, providing new insights rather than objective
17
18 recall. However, the absence of an absolute perspective on elusive knowledges still allows
19
20 them to be studied by promoting a plurality of angles and representational forms. Further, this
21
22 method has the advantage that organizational members themselves can make sense of their
23
24 knowledge, reflecting on the origins and development of practices and their complex motives,
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26 rather than relying on researcher-imposed interpretations.
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30 By making participants analysts of their own action, this method has the advantage of
31
32 establishing a bridge between theorization and practice. Participants are encouraged to take
33
34 the position of the analyst, becoming partners in their own theorization. Simultaneously, by
35
36 scrutinizing recordings of one’s own actions, opportunities for self-reflection and critique are
37
38 opened up. Such possibilities may feed back into organizational practice itself, as the data
39
40 collection process becomes a reflexive opportunity for organizational members.
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43
44 In the volleyball team example, the authors used participant-centred video methods as
45
46 a central data collection technique, based on the premise that, in a highly-specialized and
47
48 personally engaged field such as professional sports, participants could provide more
49
50 illuminating accounts than via a researcher-imposed paradigm. Conversely, the deeply
51
52 embodied and only partially verbal nature of the work made interviews an awkward solution
53
54 matching poorly with the work environment. By selecting play episodes where players had
55
56 central roles, we attempted to mediate the language-action gap. Each video was watched
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3 several times, selectively pausing at decisive moments (chosen by both player and researcher)
4
5 to explore the significance, reasoning and effects of particular actions by the members. By
6
7 watching each embodied gesture across the different players and at successive moments,
8
9 participants made inferences around the other members' states, and communication processes
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11 more generally. Figure 3 illustrates an extract of this collection.
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Figure 3 about here

The constraints of this model include the promotion of post-hoc rationalization by participants, as individuals are motivated to provide 'explanations' of their behaviour independently of their lived experience in the moment. Accordingly, videos should not encourage the justification or defence of behaviour on the video, but rather encourage the use of video in an exploratory manner as an object for reflexion more generally. A further risk involves how member knowledge may itself be affected through repositioning the subjective gaze during the conversation with researchers. The third-person, distant subject position subtly changes the nature of informant knowledge. When 'subjectively' lived experience is displaced into 'objective' discourse by participants, they may lose the phenomenological standpoint from which elusive knowledge originates. Thus, the focus should not be on verification but on comparison between participants' experiences of 'doing' and 'looking'.

Despite these limitations, this third model is appropriate for situations in which individuals struggle to ascribe words to their internalised and embodied knowledge. In these occurrences, video can play an important role in aiding organizational members to articulate meanings and to verbalize elusive forms of knowledge.

APPLYING VIDEO APPROACHES

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3 Applying the above framework, we can discern the extent to which current studies
4 make use of the diverse aspects of video data collection and how these aspects support
5 specific theoretical contributions, strengthening the link between video-based methods and
6 theoretical innovation. The three approaches provided above summarize and give order to the
7 existing literature, ranging from video as raw data to triangulation and to reflexive
8 articulation. Nevertheless, because the multimodality issue has not been central to most of
9 this literature, studies may fail to take advantage of the cross-modal properties of video to
10 make full use of their data. Table 2 provides examples of existing studies which implement
11 aspects of each approach.
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Table 2 about here

Video as Data. The first case features the use of video as raw data. Video research of this type is used in particular in close studies of workplace dynamics (Heath and Hindmarsh, 2002; Luff and Heath, 2011). Microethnographic, close analyses of video data are frequently analysed both visually and discursively (e.g. Hindmarsh & Pilnick, 2007; Koschmann & LeBaron, 2002). Videos are here used to film work dynamics, practices or behaviours within specific working contexts, such as architects' offices, control rooms or call centres, and conceptual points are drawn directly from these videoed scenes.

For example, Mondada (2012) documents the work of architects in an office space, focusing on social interactions, with the conceptual objective of illuminating the use of tools and discourses in interaction. Actions such as architectural drawing, discussion, hesitations and contrasts are recorded and micro-analysed to discern how architects interact in 'the discovery of a solution' (p.310). Video data provide multiple types of insights: associating conversational fragments with images and movements, showing interactions and looking at

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3 drawings of sketches, freeze frames and objects. These are analysed as multimodal resources,
4 mutually configuring action, with each offering a distinct point of view. These multimodal
5 data lend insights into the micro-constituents of architects' elusive knowledge.
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10 Procedurally, Mondada (2012) interprets video data from meetings, where architects
11 comment and produce drawings. She listens to informal talks and conversation between them,
12 coding bodily interactions and postures. Artefacts such as plastic models and drawings are
13 analysed from the video as resources used by architects to explain their opinions to other
14 colleagues and to translate their ideas into words. To increase the perspectival richness of the
15 video data, 4 cameras are positioned at different focal points and distances, capturing diverse
16 actors and allowing within-medium triangulation. In particular, a bird's-eye view camera
17 captures interactions that would be virtually impossible to capture via direct observation. The
18 authors concede, however, that even with multiple views it is difficult to capture
19 documentary details from video, suggesting that triangulation would be useful above and
20 beyond video work.
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34 In a second illustration, Fele (2012) documents cooperative work and tacit participation
35 in an emergency cooperation centre. Specifically, the study contributes to exploring how
36 given situational features are made meaningful from within work situations, requiring an
37 analysis of the temporal unfolding of work situations. In this case, 45 hours of video
38 recordings were made in an operation centre handling emergency calls, with calls lasting
39 about one minute each. The authors explored micro-interactions between two people working
40 on different tasks whilst sharing the same workspace. In contrast with the previous example,
41 Fele's videos show how apparently disjointed actions, performed by two participants, are
42 actually highly intertwined. The researcher gains access to ephemeral and subtle knowledge
43 by recording the sequential actions of the emergency workers. Specifically, Fele (2012)
44 strategically focuses on the interactions of operators sitting at each 'box' for a short time, to
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3 highlight subtle cues during collaboration and cooperation episodes that would be lost with
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5 more macro approaches. Data are presented in the form of sequential frames taken from the
6
7 video (see also Heath et al, 2010). By focusing on talk, bodily display, actions, gestures and
8
9 movement, video features actions that lie beyond what is being said or could be later
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11 recounted by members. It also permits an understanding of tacit exchanges between
12
13 operators, an aspect which might otherwise not be captured in texts or audio recordings.
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16 As these examples illustrate, video as raw data facilitates access to elusive
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18 knowledges by augmenting textual data with gestural cues, temporal sequences and nuances
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20 that would be obscured in conventional data. Discourse is itself interpreted in the light of
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22 such cues, and vice versa, leading to a holistic picture of situational interactions (Goodwin,
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24 1994).
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27 *Video as Triangulation.* The second model consists of video within a triangulation approach.
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29 We focus on studies that use video as a central data analysis strategy, for instance in co-
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31 coding video data with interviews and surveys into conceptual categories (e.g. Oliver &
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33 Roos, 2007). Numerous studies invoke triangulation, while mentioning video only briefly (cf.
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35 video literature review, forthcoming this volume). A typical methodology section might state
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37 “A total of 38 hours of videotape were also taken and were used as a backup to the written
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39 notes” (Fayard & Weeks, 2007:63), while not explicitly integrating video for its own unique
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41 affordances. This suggests that many researchers already collect video data, but how to use
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43 video beyond simply “backing up” interviews remains obscure. In some studies, however,
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45 triangulation actively involves video by comparing video sequences to fieldnotes and
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47 interviews without epistemically privileging one over the other. Here, triangulation implies
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49 that theory should be built from a synthesis of data sources, taking advantage both of their
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51 overlapping conclusions and their unique insights around a site.
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3 For instance, Paroutis, Franco & Papadopoulous' (2015) analysis of strategic
4 knowledge workshops combined video recordings with researcher diaries, contribution logs
5 and meeting transcripts, used together in data coding. Their theoretical objective was to show
6 how "shift, inertia and assembly" patterns marked how actors structured workshops, and
7 revealed the interactivity between tools, actions and discourses in a micro setting. By paying
8 attention to both visual and discursive material, the authors were able to match the forms of
9 data collection with the specific theoretical contributions of the study.
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18 In terms of data collection, two independent actors (researcher and assistant) took
19 observational notes and noted team contributions in real time. These notes were combined
20 with transcripts that were then read against the video itself. Video segments were divided into
21 20 discrete segments based on meaning. First and second order coding categories were
22 presented and were then complemented by video snapshot sequences to illustrate each
23 category. The result was to provide a picture of tool use and interactivity that would
24 otherwise have been difficult to depict with words alone. After presenting the visual
25 depiction, transcript excerpts fleshed out the details of the interactions, so that both visual
26 images and flow of discourse were accessible in the article format, facilitating triangulation.
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38 While Paroutis et al (2015) gain new angles on their data through multiple sources,
39 Smets et al (2014) use video data to problematize ethnographic notions of "being there" and
40 to explore the possibilities and problems around different observational positions. Their team-
41 based video ethnography of reinsurance trading in London involved around 400 hours of
42 video over the course of one year, used to support observation by 'producing more detailed,
43 rigorous and defensible insights' (p. 20). Video was used to confirm or counter observations,
44 supporting interpretations of events observed during fieldwork, thus serving a triangulation
45 purpose. By examining the material recorded, the ethnographer remembers events long after
46 the end of the fieldwork.
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Beyond verification, however, the ethnographers used video to compare classical issues related to subject positions and observations. For instance, building trust around the ethnographer's physical presence was compared with the complications of video recording, and the observational affordances of capturing movement and dynamics were highlighted by the difficulties of doing this with video. Thus, the research goals of understanding micro-interactions in a trading room was facilitated by forcing reflexivity when switching media and using different observational tools. In this way, the researchers addressed elusive knowledges by complementing traditional fieldwork with the layered, multimodal description afforded by video analysis. Video analysis complements traditional written ethnographic narratives and observation with novel affordances of zooming or freeze-framing details, enabling researchers to become aware of their own effects as an observer in the process. The visual aids afforded by video data bring the gaze itself into the scene and thus highlight the problematic notion of ethnographic "presence". Reflexivity emerges from these multimodal affordances, providing insights into elusive aspects of ethnographic fieldwork. Thus, video's versatility across modes creates conditions for exploring elusive knowledge on the part of participants.

Video as Reflective Artefact. The third approach entails using video as a reflective artefact. Here, video is used to assist participants in articulating their experiences and in making sense of their elusive knowledges. Approaches such as video elicitation techniques (e.g. Henry & Fetters, 2012; Griefenhagen, 2008) could be considered as one such approach. While some elicitation techniques are geared toward memory recovery, often immediately after actions are performed (e.g. Henry & Fetters, 2012), in others reflexivity is highlighted, where video can "make these practices amenable to more detailed scrutiny than in more traditional forms of ethnographic observation" (Griefenhagen, 2008:7). Furthermore, while elicitation

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3 techniques can stimulate memories, video can also be used to create new ideas or
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5 sensemaking, while simultaneously emphasizing participation.
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8 For instance, Marotto, Roos & Victor (2007), in a grounded theory study of peak
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10 performance among conservatory musicians, combined video with participant observation
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12 and interviews. Moving beyond triangulation, however, the video was used as a tool during
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14 note taking, and then to promote participant reflection around minute gestures during the
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16 performance. For instance, video footage revealed “first violinists physically turning around
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18 and looking at the flute at that very moment. From that moment on, the magic somehow was
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20 broken – the rest of the overture did not exceed anything we had played in rehearsals.”
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22 (Marotto et al, 2007: 399). This moment was then presented to the violinists, who amplified
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24 the point that their concentration had been broken, that they were trying to communicate with
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26 the flautist and that the unity of the performance had suffered from this distraction.
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30 The authors establish their contribution by using video beyond recording and
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32 triangulation, to promote participant reflexivity. They focus on “collective virtuosity”, an
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34 original concept that integrates verbal and non-verbal displays to understand the tacit aspects
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36 of automatized behaviours. The authors reinforce participant reflexivity, which in turn feeds
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38 back into the quality of the interviews. As Oliver & Roos (2007) describe in an earlier
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40 article, when aided by multimodal stimuli, ‘participants move beyond their discursive
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42 consciousness to a more practical consciousness, engaging in reflexive monitoring more
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44 difficult to verbalize’ (p 354).
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48 Alongside this object-mediated inquiry, a further useful example from the literature is
49
50 the work of Mitchell and de Lange (2011), representative of what may be termed
51
52 ‘participatory video research’. The research objective was to use video to build reflexivity in
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54 a rural community around shared narratives of sensitive social topics such as HIV. The
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56 analysis was centred on a South African community, where participants took part in video
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3 making under the researchers' guidance and in post-screening discussions. Video production
4 was conceived as a group process. After a one-day video making workshop, small groups of
5 community members recorded and viewed each other's videos, and were then asked to reflect
6 on their work using open-ended questions. The technique stimulated "collective reflexivity on
7 issues about which people are silent" (p. 179). Differently than in Marotto et al (2007),
8 participants were involved in both production and reflection on videos, but the central aspect
9 being the use of video to alternate between the gaze of the researcher and the participant to
10 promote reflexivity, thereby achieving the de-centering of the theoretical gaze that is key to
11 this third approach.
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23 The Mitchell and de Lange (2011) study reveals how videos may be used to stimulate
24 talk about sensitive issues – in this case poverty, disease, child abuse and crime – by means
25 of reflection on the recorded image. Video recordings allow community members to engage
26 in a form of collective reflexivity, where 'unspeakable' issues are articulated by means of
27 communitarian awareness. In its pertaining to knowledge whose articulation is taboo or
28 sensitive, this study touched upon a form of 'elusivity' not mentioned above, and provided an
29 interesting variation of the concept of articulation. In both cases, reflection by the participants
30 sheds light on how video can act as a 'catalyst or trigger in post-screening discussions' (p.4),
31 making participants themselves reflexive about their knowledge. Again, video promotes
32 reflexivity around elusive knowledge by presenting knowledge in its diverse modalities.
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45 DISCUSSION

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47 Beginning with the concept of elusive knowledge as an epistemological and methodological
48 problem in organizational scholarship, the above approaches highlight video-based methods
49 as one way of gaining traction on this problem. Based on the argument that the problem of
50 elusive knowledges is at least in part a problem of modal limitations in knowledge, we
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3 propose that multimodality is central to gaining a pluralistic vision of a research site. Video,
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5 with its multimodal possibilities, becomes an important support to study elusive knowledges.
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8 Video is ideal for studying communicative interactions that present knowledge in
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10 diverse formats: spoken language, emotive expressions, interpersonal positioning, temporal
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12 sequences and the like (Silvester et al., 2000). Meaning-making in such interactions is
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14 distributed across different modes (Price, Jewitt & Brown, 2013). Understanding the diversity
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16 of modes and their relationships is pivotal to understanding a given research context.

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18 Working across these diverse modalities led us to examine video as a technical device,
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20 illustrating three distinct and progressively complex uses of video-based methods that allow
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22 exploration of these relationships.
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26 Using video as raw data treats video as semiotically rich, multi-layered, and
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28 intrinsically cross-modal, featuring images, sounds and temporal continuity. By recording
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30 participant interaction over time, videos capture temporally-extended, unfolding actions,
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32 while providing a crucible for cross-modal translations of meaning. This method may be
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34 extended by seeking out and comparing alternate modalities of an event or phenomenon,
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36 complementing video data with participant observation, organizational archives or historical
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38 data. The third approach directly involves participants in the research process, using video as
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40 an artefact for reflection. Organizational members' internalised knowledge is made explicit
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42 by eliciting commentaries on relived experiences and attributions of meaning.
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46 We contextualized these three approaches by a.) Briefly describing their current use
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48 within the organizational literature b.) Illustrating their mechanics within the empirical
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50 illustration of an ongoing video study of volleyball professionals and c.) Highlighting
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52 showcase studies where each method led to a conceptual contribution to the literature. The
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54 three sets of techniques should not be taken as independent approaches, but as
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56 complementary methods based on different forms of multimodal exploration.
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3 Our study thus offers a methodological contribution to a range of organizational
4 concerns around what we term ‘elusive knowledges’ by focusing on the methodological
5 issues raised by multimodality, a concept increasingly surfacing in micro studies of social
6 interaction (e.g. Pink, 2011; LeBaron, 2005). Previous studies provide an excellent overview
7 of video production techniques from the perspective of multimodality (e.g. Luff & Heath,
8 2012; Heath, Hindmarsh & Luff, 2010), outlining the ability of video to take multiple
9 perspectives. By theorizing multimodality from the perspective of multiple affordances, we
10 address the articulation of elusive knowledges. Drawing together tacit, aesthetic and
11 embodied knowledges as avenues for multimodal research, we engage in a “consensus-
12 creating” (LeBreton, 2014; Hollenbeck, 2008) exercise, showing that the common
13 methodological dilemma of elusiveness can be arbitrated through a sensitivity to
14 multimodality. We thus lay out an array of organizational phenomena around which video
15 research can be practically applied, outlining the broad approaches this application can take.
16 The three modes build upon one another in a progressively reflexive view of data collection.
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34 In this way, we contribute to a growing interest around the use of videos in
35 organizational research methods scholarship, but also to using video to demonstrate a deeper
36 methodological point that is not limited to video. This is illustrated by exploring the
37 methodological challenges and potentialities of video to generate deep accounts of
38 organizational life (Luff and Heath, 2011; Knobeluch, 2012; Knoblauch & Schnettler, 2012).
39 Thus, one of the key lessons of the ‘visual turn’ in organizational studies is that data contain
40 material properties that can be leveraged to draw new insights. Such insights can inform areas
41 in which materiality is a key aspect of theorizing human activity, from sociomateriality (e.g.
42 Jarzabkowski & Pinch, 2013) to human-technology communication (e.g. Suchman, 2007)
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54 In highlighting different ways of using videos, we make an additional contribution by
55 linking the concept of elusive knowledges with methodological issues of data collection. By
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3 framing articulability as a general problem, we sought to create a common vocabulary
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5 dealing with the issue of elusive knowledges. As argued above, numerous studies underscore
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7 the difficulty of articulating embodied knowledge, yet few studies thematise this aspect of
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9 knowledge as a central methodological problem (Hakanson, 2007; Taylor, 2002). The current
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11 paper thus contributes to laying a basis for empirical research around elusive knowledges.
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15 Nevertheless, our attempts to approach elusive knowledges must be acknowledged as
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17 approximative. The difficulty of articulation into language can result from a lack of modal
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19 diversity, but even such diversity, given current academic publishing norms, remains tied to
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21 the written word. Notably, attempts to not only gather and analyse but also to *present* results
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23 via video have gained some traction and may prove to be promising. For instance, some
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25 scholars have included CDs with their work (e.g. Jones & LeBaron, 2002), and outlets such
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27 as the *Academy of Management Discoveries* have themselves explored the use of media tools.
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29 The possibilities for multimedia academic production raise the issue of the epistemology of
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31 discursive modes and the codification of academic knowledge, issues that are beyond our
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33 scope here.
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37 Furthermore, in dealing primarily with video data as an ‘artefact’ or tool to promote
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39 reflexivity, we leave for future research those issues involving constructing video images
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41 themselves. Indeed, all video images, through their production choices, selectively include,
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43 exclude and frame aspects of environments (MacDougall, 2011). Heath et al (2010), for
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45 instance, describe how different camera positions and angles allow different data
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47 configurations. In short, video images are not epistemically ‘objective’, but using video to
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49 take advantage of cross-modal properties can promote reflexivity around elusive knowledges.
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51 Such reflexivity operates at three progressively complex levels: that of the inner relations
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53 between modalities themselves within a video, that of the comparison between video and
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55 other data and the subjective processes of research participants as they reflect on videos.
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Likewise, we can imagine scenarios where reflexivity is promoted not through viewing but through producing videos (Lomax, 1998; Pink, 2001). Such uses might parallel, for example, Warren's (2002) technique of eliciting participant-created images to stimulate reflection. Producer-driven techniques would use the construction of videos to show how selective perception goes into the creation of representations. Because our approach focuses on how viewers (scholars or participants) struggle to make sense of representations based on their cross-modal aspects, such producer-driven approaches are beyond our current scope, although they would suitably complement the current discussion.

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In keeping with the focus on data collection as opposed to production, we treat videos as 'simple' recording devices and ignore the vast array of montage elements available in video-editing, such as perspective-taking, temporal manipulation and cutting, backlighting and angles, ellipses, and manipulation of focus, among others. A wide array of cinematic and filmic production techniques are known about and have been discussed elsewhere (Henley, 1998), and this is not the focus here. It is the case that researchers have a wide array of techniques for selecting and framing video data beyond treating the camera as an 'amateur home video'. Each of these techniques changes the modal and semiotic characteristics of the resulting data, thus shifting the ways in which each of the three above approaches might unfold in practice. However, the three approaches are sufficiently general that they could be applied across particular techniques, techniques which could be chosen based on the given research focus. As such, the diverse cinematic practices available for producing video data are not opposed to, but subsumed within, the current wide body of approaches.

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Further, both including participants in the research process, and stressing reflexivity through textuality, are laden with power implications that merit further exploration. For instance, as compared to raw data or triangulation approaches, using video as reflective artefact involves participants in the interpretive process, giving them authorship in the

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3 theoretical process. This may be particularly important when dealing with elusive
4 knowledges, when researchers might interpret gestures, tool use or other subtle cues in ways
5 quite different from the participants. In such cases, researcher-participant dialogue may help
6 avoid imposing meanings alien to those of the actors. Yet, for the same reason, bringing
7 participants “outside” of actions to adopt the role of “theorists” may bring its own dangers,
8 where translating actions into text may alter the ways participants view their own actions.
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10 While promoting participant reflexivity may be an important ‘performative’ aspect of
11 research (Spicer, Alvesson & Karreman, 2009), it also risks imposing an “unsolicited
12 reflexivity” (Tobin & Davidson, 1990), wherein people’s lived experiences seem to acquire
13 legitimation through textualization. As cited in Clifford (1986) above, the “death in life” of
14 textualization carries ethical implications that merit further exploration.
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27 CONCLUSION

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30 Conceptually, we have discussed the intersections of tacit, aesthetic and embodied
31 knowledges in their ‘elusive’ aspect, focusing on articulability as a common theme rather
32 than the differences between each literature. Such treatment should not be regarded as
33 equating the approaches, but highlighting a particular problematic. Additionally, the
34 methodological focus on articulating forms of knowledge that are situated, material and
35 embodied implies strong parallels with practice-based theories (e.g. Seidl & Whittington,
36 2014; Nicolini, 2012; Orlikowski, 2010; Nicolini et al, 2003). The relation of articulation
37 with the situatedness of theory-in-practice raises important questions about how, and under
38 what conditions, situated knowledges emerge as ‘elusive’, and when, by contrast, they appear
39 more amenable to reflexive contemplation. Our focus on methods tackles only one side of
40 this question, that of articulation in theory, but largely takes for granted the initial status of
41 “elusiveness”. We thus achieve a merely partial inroad into the problem of elusive
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3 knowledges by posing it as a methodological obstacle, presenting the concept only in its
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5 general contours and leaving it to be fleshed out in further research.
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8 In sum, we have focused on one small slice of the research endeavour, that of
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10 exploring elusive knowledges via video. The emergent nature of this mode of research
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12 means that much work remains to be done; even within this limited scope, myriad
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14 foundational and practical questions remain. Such questions are best addressed through
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16 regarding video in terms of its capacity to bring together modes of experience, thus linking
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18 video to the emerging organizational study of multimodality. Bringing in issues of both
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20 content and medium, image and movement, video methods provide an inroad into
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22 foundational questions that are increasingly occupying organizational researchers.
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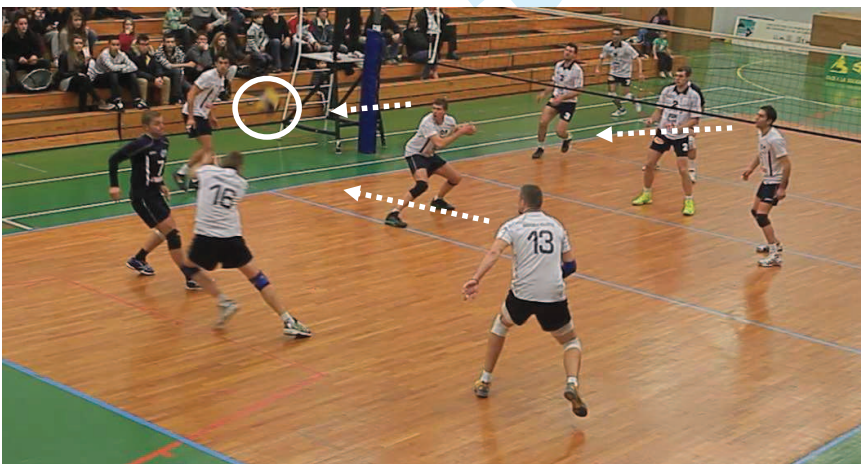
Table 1. *Alternative uses of videos in the research process*

Type of model	What it consists of	Reflexive Possibilities	Constraints	Situation in which to use it
Video as raw data	<ul style="list-style-type: none"> - Direct coding of video data - Content coding can be complemented by cross-modal information - Modalities compared by contents but also by differential mode of representation (e.g. sound, image) 	<ul style="list-style-type: none"> - Inherently cross-modal as opposed to text-based techniques - Widen the semiotic resources available for interpretation - Maintain awareness of the material nature of representations 	<ul style="list-style-type: none"> - Does not include organizational members' first-person experience as data - Limited by horizons of video 'gaze' - Video provides an 'illusion of objectivity' 	<ul style="list-style-type: none"> - Where gestural or non-verbal elements are involved - Where knowledge is tacit and difficult to articulate - Where interviews are likely to be biased or self-censored
Video as triangulation	<ul style="list-style-type: none"> - Comparison across methods - Interviews, observations, field notes combined to approximate experiences. - Confirmation versus pluralistic use 	<ul style="list-style-type: none"> - Comparative possibilities for verification and agreement - Interpretation of one source of data can be aided by the other - Reveals modal differences among data - Each mode contributes to more holistic understanding of contexts 	<ul style="list-style-type: none"> - Which modalities to compare? - Ambiguity in cases of disagreement - Incommensurability between modalities 	<ul style="list-style-type: none"> - Where different sources of data provide unique perspectives - Where diverse communicative resources are available and coherent
Video as reflective artefact	<ul style="list-style-type: none"> - Assisting participants in constructing, remembering and articulating experiences - Display and interview simultaneously - Sensemaking around embodied knowledge 	<ul style="list-style-type: none"> - Offers participative opportunity in articulating elusive knowledges - Reduces biases of researcher-imposed interpretations. - Increase bridge between theorization and practice - Possibilities for self-reflection and critique 	<ul style="list-style-type: none"> - Danger of post-hoc rationalization - Conflation of first-person experience and reconstruction - Third-person subject position may change nature of knowledge 	<ul style="list-style-type: none"> - Where critical distance from practice is not routinized - Where elusive knowledges are not evident from direct cross-modal observation - Where verbal communication requires augmentation or reference

Figure 1. Illustration of video used as Raw Data – Unfolding of Collective Action



- Two players approach ball
- Number 16 calls for initiative



- Number 7 returns to position
- Teammates' gaze focuses on player/hit

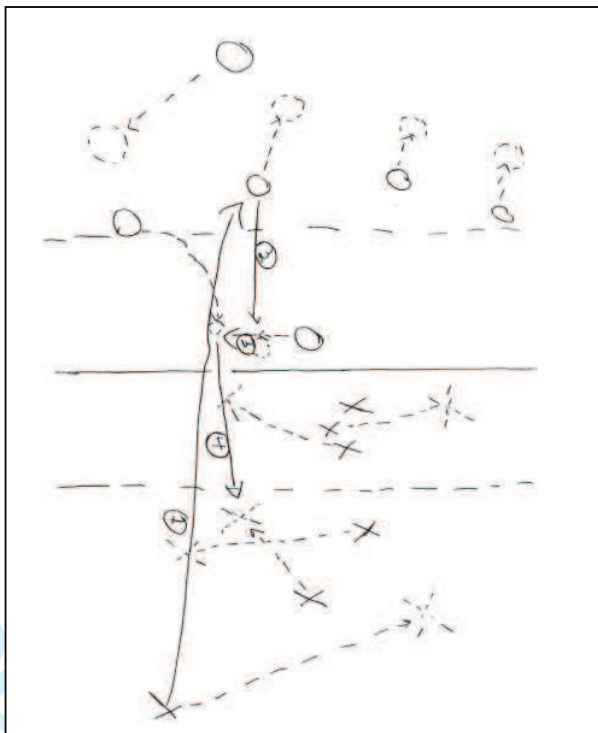


- 16 moves out of way of play
- Gaze moves to ball in air (off screen)

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Figure 2. Illustration of video used as Triangulation – Stills versus Researcher Sketch of Action versus Interview Description

(General)




Server: Everyone makes the decision in the moment, but I don't say that my decision is most important, no. Maybe it's the decision who is the receiver of the volley that is my decision. For example, how we play it, if we play good or not good, maybe my decision is to change the player who attacks. But also, my decision is the decision of the reception player, who receives. And this is the one circle who comes between me, and that is the system. After that it's difficult to say if it's more important than the decision of the attacker.

Researcher: Do you see it as a circle, and you're the middle of the circle?

Server: Maybe it's like a circle - For example, my decision is harder than the decision of the receptor. More difficult - for example, he has the decision to give the ball to one player, but my decision is to give the ball. Which player? I have 4 players, which one to give the ball?

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Figure 3. Illustration of video used as a Reflective Stimulus

Screenshot from Video Episode - Choice between two possible attacks	Player Commentary on Episode During Multiple Viewing
	<p>Player: Yes, yes. For example, in this moment that I explained, I planning to play with the middle blocker and poster 4. But, we didn't make the point, we made the error, it was not what I wanted, after that I changed my plan, I played with another player, thinking "let's see what happens there".</p> <p>Interviewer 1: but you change... in the plan... because you cannot say to the players "we will change"?</p> <p>Player: No, no, no, no! No, me alone I make the decision. For example what I played, what I said for example. In this position, I am planning to play poster 4, poster 3. In this point we make the point, but imagine if we had made a fault, we had lost the point, and after that I have a second solution but I don't say...</p> <p>Interviewer 1: ...For another situation...</p> <p>Player: ... I don't tell my solution to anybody, but I have it. For example, if we stay in the same position five times, I must find some solution with another player, something else. But also, also the situation in the moment that I make it, you know the ball is very difficult to set perfectly. And you want to play with the poster 4, but it's impossible - it's very difficult to set the ball in poster 4. I make my decision for this ball to set, to come good on the position where I set. It's not that I don't see which player I have, what I am planning, but to make the solution out of the difficult situation with what I have it in this moment.</p>

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Study	Description of Cases	Research Problem	Data Sources	Approach it approximates	Lessons learned
Mondada (2012)	Architectural office	Social interaction among participants	Video recording and video transcription	Video as raw data	Multimodal data available from videos aid researchers to understand architects' interaction and how their ideas turn into a 'solution'
Fele (2012)	Operations centre handling emergency calls in Italy	Coordination and collaboration emerging from the interaction between workers	Video recording and telephone call recording	Video as raw data	Gestural and non-verbal recording permit an understanding of tacit exchanges between operators working on different tasks
Paroutis, Franco & Papadopoulous (2015)	Management team during a strategy workshop	How strategy tools are created during workshops	Video, Researcher diary, Research Assistant observations	Video as triangulation	Shift, inertia and assembly describe forms of visual interaction during tool creation
Smets, Burke, Jarzabkowski and Spree (2014)	Reinsurance trading in London	New forms of organizational ethnography.	Team-based video ethnography	Video as triangulation	Multimodal data available from videos can complement and support traditional fieldwork. They can confirm what emerge from observations and provide 'rigorous' insights.
Marotto, Roos & Victor (2007)	Musical conservatory orchestra	How collective talent relates to collective performance	Ethnography, video, written journal	Video as reflective artefact	Individual virtuosity can contribute to collective peak performance through reflexivity and shared emotional experience
Mitchell and de Lange (2011)	1 Rural southern African community	Stimulate community members to talks about 'sensible' issues	Video analysis, follow-up viewings, small group discussions, and community screening	Video as reflective artefact	Videos can be used by participants themselves and can function as a catalyst or trigger in post-screening discussions

Table 2. *Recent examples of cases from the literature*

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