Research Article

Building Situation Awareness on the Move: Staff Monitoring Behavior in Clinic Corridors

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Abstract

We conducted a workplace research project on staff mobility in a Swiss hospital outpatient clinic that involved extensive fieldwork and video recordings. The article describes monitoring practices and routines that staff engage in as they walk through the corridors and in and out of the clinic's rooms. The staff perform checks on on-going activity, share their observations with colleagues, and take responsive action while engaged in away-oriented walk or in specific roaming, action-seeking, rallying, and patrolling walk. We argue that these behaviors are closely associated with building and sustaining situation awareness (SA) with regard to the status of the clinic's functioning. They contribute to the coordination of a spatially distributed team that rapidly accomplishes consequential and closely interrelated activities in constantly changing circumstances.

Keywords

hospital clinic; staff mobility; situation awareness; monitoring; corridor interactions; video-based fieldwork; workplace study; multimodal analysis; qualitative; Switzerland

Hospital staff face the challenge of remaining aware of the care unit's functioning while they conduct highly consequential and interdependent activities subject to constant contingencies in a distributed workspace in which information is dispersed (Wright & Endsley, 2008). Situation awareness (SA) is a process involving *perception* of relevant situational stimuli, *comprehension* of their meaning (e.g., in relation to goals), and *projection* of this information to anticipate future developments (Endsley, 1995). SA was originally envisioned as a cognitive construct involving processes related to attention, memory, and goals. More recently, research has focused on awareness as a social practice including building and sharing perceptions and understandings among participants in common scenes (Wright & Endsley, 2008). Heath, Svensson, Hindmarsh, Luff, and von Lehn (2002), thus investigated the production of common awareness in social interaction, describing how control-room personnel design their activities to display parts of them that may potentially be relevant to their colleagues. Schmidt (2002) distinguished two generic awareness-building practices: monitoring—keeping tabs on what is going on and acting on this information—and displaying—making visible what is going on for colleagues. Via reciprocal practices of displaying and monitoring, coworkers actively collaborate to further awareness of how things are going in their workspace.

SA as social practice is built into hospital work in the form of various routines (like shift handover meetings) and artifacts like whiteboards, medical records, and the doctors' list providing an overview of the patients in the ward (Randell, Wilson, Woodward, & Galliers, 2010). Mackintosh, Berridge, and Freeth (2009) also studied the role played by the unit's coordinator and the ward clerk, as well as by serendipitous communication between staff members consisting of "updating others in passing" (p. 49). Bardram and Bossen (2003, 2005) focused on the importance for awareness-building and team-coordination of staff walking between the different workspaces of the hospital department, following similar research on nonmedical settings (Bellotti & Bly, 1996).

In this article, we expand research on building SA via monitoring practices by focusing on *monitoring related to mobility*. Mobility is an important aspect of hospital work. Clinicians spend a considerable part of their time traveling through the hospital. Hendrich, Chow, Skierczynski, and

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Lu (2008) found that nurses in surgical units spend 30.6% of their work time in places other than patients' rooms and the nurses' station, and walk a median distance of 4.8 kilometers in a 10-hour shift. Yousefi (2011) noted that hospitalists spend 8.2% of their work time traveling within the hospital. Bardram and Bossen (2003, 2005) studied a hospital hematology department in which the nurse working a day shift walks a mean distance of 6.8 kilometers over a period of 7.9 hours and the physician on call walks 6.1 kilometers over 18.9 hours. They coined the phrase "mobility work" to describe an activity whose main function they consider to be making "the right configuration of people, places, resources and knowledge emerge" (Bardram & Bossen, 2005, p. 151). Mobility involves traveling or transporting objects or patients through transitional spaces such as corridors in which clinicians furthermore accomplish many other activities. "Hallway medicine" (Peleg, Peleg, Porath, & Horowitz, 1999) and "curbside consultations" (Kuo, Gifford, & Stein, 1998) are common phenomena often occurring in corridors. Medical supervisors provide "corridor teaching" (Pearce, 2003) to medical trainees before or after visiting patients in their room. Staff also use corridors as a space to express emotions they cannot show in front of patients (Miller et al., 2008). Long, Iedema, and Bonne Lee (2007) distinguished up to five modes of "corridor talk": clinical, technological, organizational, affective, and reflexive (see also Iedema, Long, & Carroll, 2011).

Despite the ubiquity of mobility in hospital work on the one hand and the emerging understanding of SA as a social practice embedded in everyday activities, there is little research linking these two concepts. Some studies on building SA in hospitals have focused specifically on monitoring behavior but mainly in situations of micromobility (Luff & Heath, 1998) such as anesthetic (Hindmarsh & Pilnick, 2002) and surgical procedures (Kolbe et al., 2014; Korkiakangas, Weldon, Bezemer, & Kneebone, 2014). An exception is Reader, Flin, Mearns, and Cuthbertson (2011), who study behavior contributing to SA during clinical rounds. The paucity of research on unscheduled mobile situations may be due in part to the practical challenges inherent in the systematic observation of fleeting behavior, which requires the continuous presence of researchers (e.g., shadowing) or unobtrusive use of video or audiorecording devices.

We conducted a research project on the work interactions in which staff engage as they move around in a hospital outpatient clinic in Switzerland. We showed that clinicians' corridor occupations and conversations are frequent, adopt a diversity of forms, and serve a wide array of activities (González-Martínez, Bangerter, Lê Van, & Navarro, 2016). In this article, we delve into the relationship between staff mobility and the practical accomplishment of SA by describing specific monitoring behavior performed via mobility in corridors. We make a distinction between *opportunistic* and *goal-directed* mobile monitoring behavior. Opportunistic monitoring arises from staff movement through the clinic that is directed toward a specific task not related to monitoring. Because walking somewhere, either alone or while conversing with a colleague, does not fully exhaust staff members' cognitive or interactional capacities (Mayor & Bangerter, 2016), they may use partly idle resources (Miyata & Norman, 1986) like gaze to check the state of the clinic, at least in the areas they move through. On the contrary, staff may embark upon the navigation of the clinic with the specific purpose of examining ongoing activity and deciding on appropriate courses of action. Here, we describe different routines of such goal-directed mobility connected to the work responsibilities of the clinicians undertaking these rounds.

Method

Setting

The setting of our research project is an outpatient clinic in a 56-bed acute-care hospital in the French-speaking part of Switzerland. The clinic provided both scheduled and walk-in health care services: urgent care for non-life-threatening emergencies, day hospital outpatient treatments, general medicine, and orthopedic consultations, and wound-dressing consultations. On weekdays, 14 staff members on average worked in the clinic at the same time, including a secretary-receptionist; a head physician; a senior resident; several fellows, interns, and junior residents; a head nurse; and several nurses, aides, and nursing students. In addition, other members of the hospital personnel often visited the clinic to perform occasional tasks. On the weekend, the staff was reduced. The clinic occupied the ground floor of one wing of the hospital. The various rooms (22 in total) were served by two long, parallel double-loaded corridors connected in the middle and at the ends by shorter corridors (Figure 1). There was no nursing station and the break room occasionally served as the staff meeting room when needed.

Data Collection

We conducted a video-based field study (Heath & Hindmarsh, 2002) pursuing the ethnographic aim of documenting social practices as they are followed and shaped on the spot (Hammersley & Atkinson, 2007). To gain a general understanding of the clinic's functioning, Lê Van spent 42 days observing activities taking place in the clinic's rooms and corridors. She conducted three formal individual interviews—one with the head

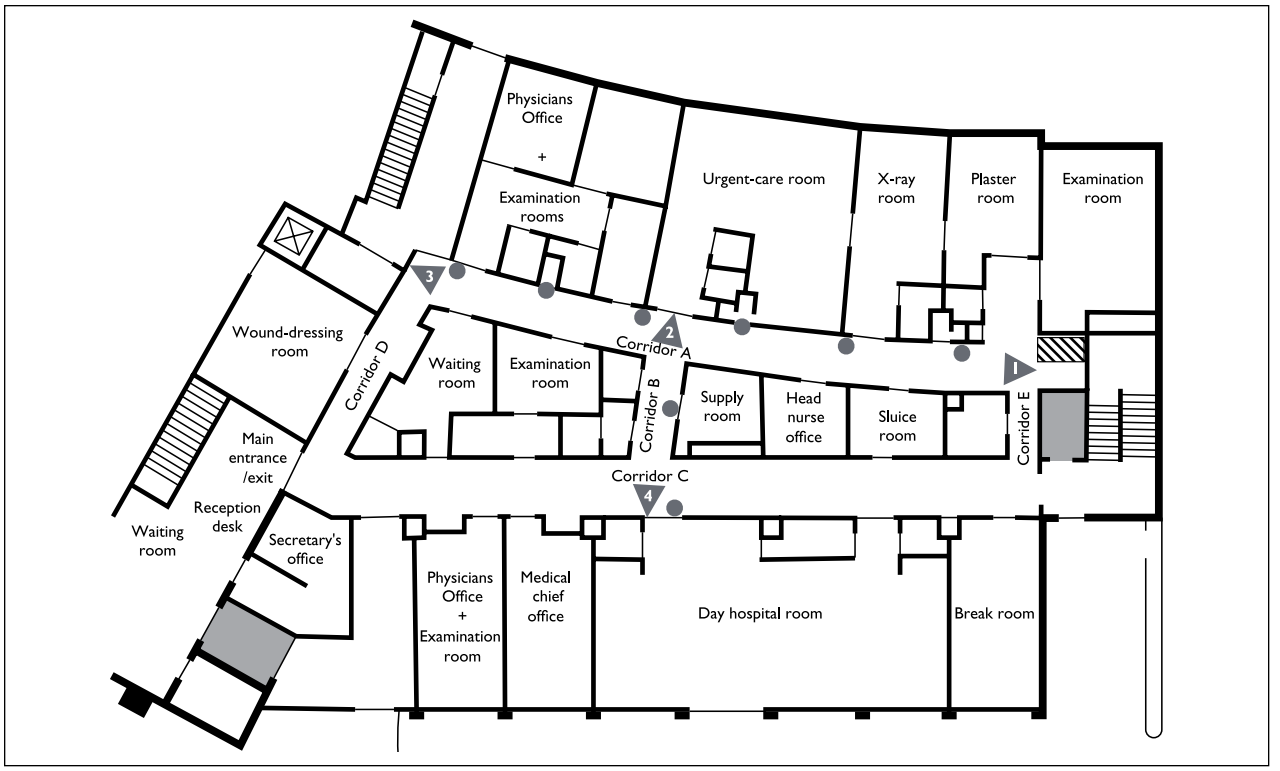

Figure 1. Clinic premises and recording setup.
Note. The triangles represent the video cameras, the dots the wireless microphones, and the striped rectangle off Corridor A the reception/mixing/editing station. For scale, Corridor A is 27.40 meters long.

physician, one with the head nurse, and one with two nurses who often acted as triage nurses—and had around 40 informal interviews with the general staff. She also shadowed the head nurse, nurses, and patients for 56 hours and collected 50 documents (work schedules, medical forms, information sheets, and procedure checklists). At the end of the fieldwork period, assisted by an audiovisual technician, González-Martínez and Lê Van video-recorded activity taking place in the clinic's corridors. By this time, the research team had already become a common fixture in the clinic and had amply discussed the recording with the staff ahead of time.

We recorded over the course of seven consecutive days, 12 hours per day, without interruption except for a half-hour break to change the cameras' batteries and memory cards. The recordings were made with a complex technical setup placed in the clinic's corridors (Figure 1). This setup was composed of four HD video cameras suspended from the ceiling with their corresponding internal microphones, eight wireless microphones suspended from wall light fixtures, and one reception/mixing/editing station located at one end of Corridor A, behind a screen. The cameras and microphones were all operating simultaneously. In this way, we recorded a total of 331 hours of video. We synchronized the video recordings of the four cameras and the audio recordings in multi-cam Final Cut Pro® files. We used StudioCode® software to annotate and code portions of the video.

Ethical Considerations

The research protocol was accepted by the hospital's board of directors and included ethics requirements related specifically to the constraints of video recording in clinical setting (Broyles, Tate, & Happ, 2008). The clinic staff gave voluntary oral informed consent for research participation and approved the reproduction of video clips and still images of themselves for the purposes of the project. Patients and individuals external to the clinic were informed by written and oral means of the research being carried out in the clinic. They were told that video recordings were taking place in the clinic corridors but could be interrupted at any time at their request. Following the research protocol, we kept footage only of the research team, the clinic staff and six other members of the hospital personnel who visited it recurrently and also gave voluntary oral informed consent (37 individuals in total).

Data Analysis

The recordings provided detailed information on how mobility features in the clinic's everyday functioning; this information was supplemented and put in context by the ethnographic data (Heath & Hindmarsh, 2002). We performed descriptive statistical analysis of the prevalence of corridor occupations and talk events based on the coding of the video (see González-Martínez et al., 2016, for the results), content analysis of the ethnographic data oriented toward the identification of work practices (Hammersley & Atkinson, 2007), and multimodal conversational analysis of video excerpts (Stivers & Sidnell, 2005) that we transcribed according to the Jeffersonian conventions (Jefferson, 2004). This article is based on the two latter types of analysis. The three authors examined the material both independently and as a group, identifying recurrent staff behavior and analyzing its features as well as its connection with the clinic's operations. The research team discussed the findings until agreement on a common description and analysis was reached (see Hindmarsh & Tutt, 2012, and Knoblauch & Schnettler, 2012, on the data-session analytic practice followed).

Findings

In the clinic, some staff members are formally assigned to specific tasks and workspaces. For instance, one nurse may be in charge of the urgent-care room, another nurse the day hospital, and a third the wound-dressing room. Nevertheless, all staff members move continuously through various rooms to gather the resources necessary for their work, attend to patients in different clinic spaces, and assist their colleagues in their own work stations. While going from one place to another, staff keep tabs on what is going on in the corridors and adjacent rooms; we describe such opportunistic monitoring practices in the first part of this section. In the second part, we identify goal-directed walking routines specifically oriented toward examining ongoing activity in the clinic and taking appropriate action.

Opportunistic Monitoring Practices While Walking

When traveling, staff are oriented both to the task at hand and to the surrounding environment, gathering information that may be relevant for subsequent action and contribute to the monitoring of the clinic's functioning. A basic but valuable practice consists of staff members systematically performing visual checks of adjacent rooms and hallways while walking down the corridors on their way to a destination (see Kraut, Fish, Root, & Chalfonte, 1990, for a similar observation of staff in an R&D laboratory).

In Excerpt 1, Camille, an intern, walks from the clinic's reception office through Corridor B to the urgent-care room (Figure 2).

Excerpt 1: clip 1425[1]

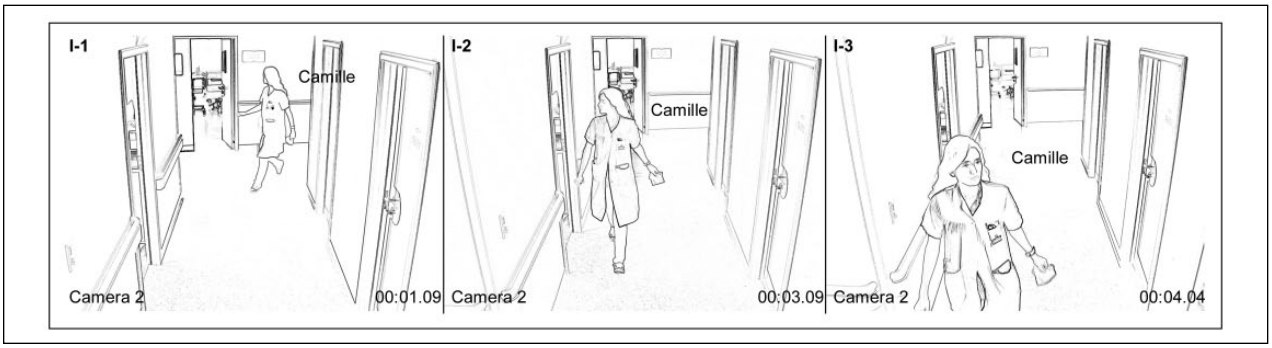

Figure 2. Excerpt 1: clip 1425.

As Camille passes by the day hospital (I-1), the stock room (I-2), and the examination room to the left of the urgent-care room's entrance (I-3), she looks intently into each one. She walks very rapidly (as shown by the time codes), at a constant speed, and without any sign of hesitation in terms of her trajectory. Her behavior is thus unlike that of staff walking while looking around for someone or something whose location is unknown. Moreover, the visual orientations to the adjacent rooms are focused and last long enough to be seen as checking behavior, in contrast to mere motor-associated incidental gaze.

With such visual checks, staff collect information on the clinics' functioning that on some occasions serves as a source of future inference and action and, on others, is immediately put to use. In Excerpt 2, Leonard, the clinic's medical chief, and Christophe, the clinic's head nurse, walk from the break room through Corridor B to the urgent-care room (Figure 3).

Excerpt 2: clip 617

```
 1  Cho:  well, >now< I pack the bags I make a small ro:und (0.5)
 2        (°how) it's going <but well the two intakes have
 3        gone up,° (0.9) °I think it has: probably emptied a
 4        little,° (0.3) >°ah: well. it's the second[I-1] perfusion
 5        besides [so  ] she (him)°<
 6  Leo:          [yeah]
 7        (0.9)
 8  Cho:  so[I-2] (him) he is going to ↑lea:ve, (1.0) >him< (.)
 9        ↓it's:[I-3] a small auscultation=>it's ↑you who is going
10        to auscultate him or ↓not<
11        (0.3)
12  Leo:  >it's me< (0.6) (I think so yes)
```

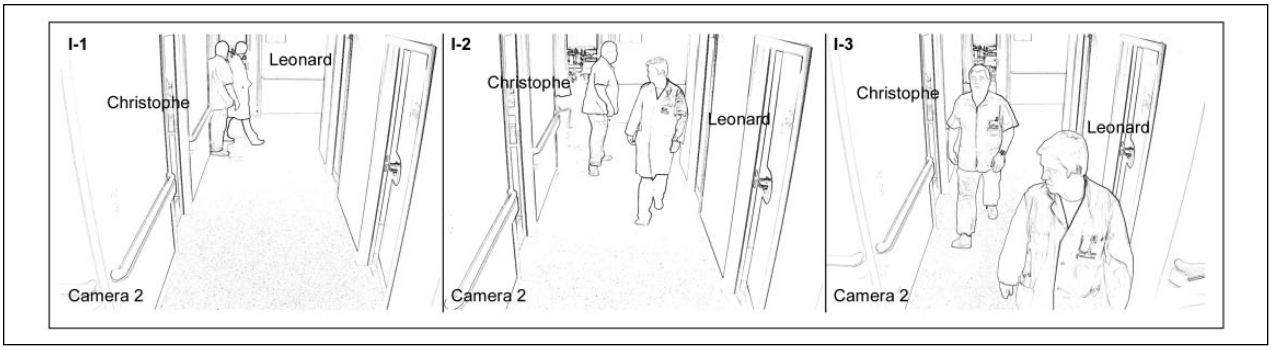

Figure 3. Excerpt 2: clip 617.

As they pass by the day hospital room, Leonard and Christophe both glance inside it (I-1). Then Leonard looks inside the stock room (I-2) while Christophe is looking in the direction of the clinic's entrance (I-2). As Leonard crosses Corridor A, he looks at the end of the corridor to his right (I-3). At the beginning of the excerpt, when Christophe reaches the entrance of the day hospital room, he stops and leans over the door to look inside the room and comments (from "ah well" in line 4 to "so" in line 5) on what he sees with Leonard, who agrees with him. He then resumes walking and engages with Leonard in decision-making on what to do next (9-12) based on their observations. The excerpt shows a practice consisting of more than one staff member glancing inside rooms while passing by, sharing whatever they happen to see there and coordinating future action on this basis.

The monitoring practices involve several sensory modalities apart from vision. Staff are also attentive to what they may hear as they move around the clinic. The head nurse in fact stated the importance of always having "an ear to the ground" to stay informed and anticipate future action (see Vuckovic, Lavelle, & Gorman, 2004, on staff eavesdropping in an intensive care unit and Bjørk, Tøien, & Sørensen, 2013, on nurses' "floating around" in the staffroom). Thus, time and again, staff members take action on behalf of their colleagues based on what they happen to hear, without necessarily having observed anything visually. For instance, a nurse may pick up the phone and book a radiology test after she hears the doctor, who is inside one of the urgent-care cubicles, telling the patient that he is going to have this test (fieldwork notes_day 10).

While walking around, staff also remain attentive to odors that may constitute clinical symptoms, evidence of the use of specific products, or indications of bodily or environmental hygiene conditions. The following excerpt bears witness to this practice.

> 10:00 am. There is an appointment for the wound-dressing room. Suzi is the nurse in charge of it, but the patient has not arrived yet. 10:09 am. Amelie, a nurse aide, enters the urgent-care room and looks at Suzi. Suzi: "Is he here?" Amelie: "Yes" (as she answers, she holds her nose to signify that the patient smells bad), Suzi: "Great!" Suzi leaves, picks the patient up from the interior waiting room, and conducts him to the wound-dressing room. (fieldwork notes_day 27)

While passing by, Amelie has caught sight of the patient in the interior waiting room and noticed the way he smells. She passes the information on to the nurse in charge of taking care of the patient, who uses it upon the patient's arrival as she goes to pick him up. Amelie's monitoring and information-sharing immediately impact the clinic's

functioning because Suzi limits the delay in her schedule and the patient is taken care of without any further waiting. The information concerning the patient's smell is also relevant in terms of the care needed by a patient coming for a wound dressing, and is communicated by a modality (the nose-holding gesture) that is sensitive to the potentially delicate nature of the information and the need to limit its transmission to a specific interlocutor.

Not only do staff sustain their own awareness of the clinic's operation, but they also share with colleagues whatever they are perceiving that may be relevant to them and rely on this information to orient their colleagues' involvement in the clinic's functioning, thus directly furthering common awareness. Thus, in Excerpt 2, Christophe shared with Leonard, his walking companion, the activity he observed inside the day hospital, and then asked whether he was going to auscultate the patient being tended there himself. Excerpt 3 is a more complex instance, as the monitoring practice involves orienting the attention and action of a third person encountered by chance in the corridor. In this excerpt, Christophe walks from the clinic's reception office to the urgent-care room through Corridor B, followed by Beatrice, the hospital's chief nurse (Figure 4).

Excerpt 3: clip 1205

```
 1        (1.1) ((beeping))
 2   Bea: (there's something) that is beeping
 3        (0.8)I-1
 4   Cho: there's something that is bee::pingI-2
 5        (1.4)
 6   Cho: Christine she's stillI-3 in ↑plastering?
 7        (0.4)
 8   Jes: ↑yes h hinhin >good morning<=
 9   Cho: =s↑ti:ll
10        (1.7)
11   Jes: well she just w- went ↑there ↑now
12        (0.4)
13   Cho: ah: >ah well yeah we just went there that's it<
14        (2.3)
15   Jes: <it is ↑bee:ping> (0.3) so it's finished.
16        (4.7)
17        ((beeping stops))
```

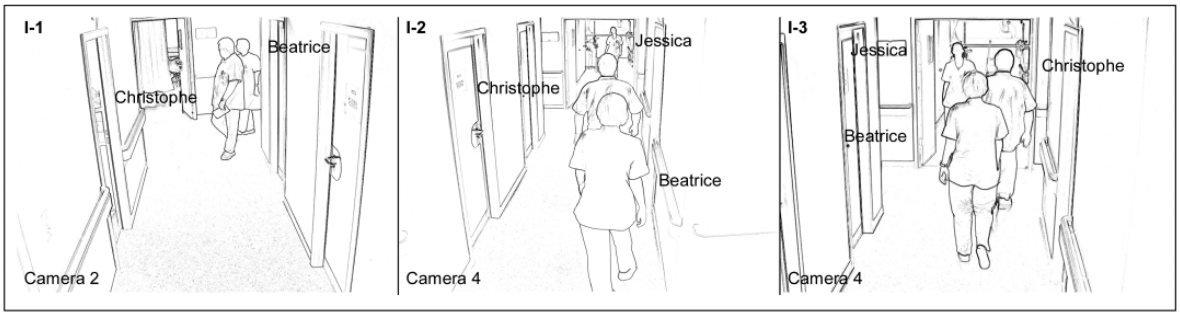

Figure 4. Excerpt 3: clip 1205.

As they approach the day hospital room, Beatrice produces a noticing about a beeping sound (2). Without stopping, they both look inside the room (I-1) and Christophe repeats Beatrice's remark as Jessica, a nurse who has just left the urgent-care room walks toward them (4, I-2). The repeat functions as a call for attention, tinged with disapproval, addressed to Jessica. As they come closer, Christophe and Jessica engage in talk about the fact that Christine, the nurse in charge of the day hospital, is in the plastering room (6, I-3). Christophe conveys his opinion that her absence is abnormally lengthy, which Jessica counters without however managing to persuade her boss (9-13). The talk unfolds as the two vehicular units (Goffman, 1971) approach, pass each other by, and move away, without stopping at any point.

Medical equipment such as infusion pumps and transfusion devices have warning tones that go off to indicate the conclusion of a treatment procedures, the depletion of an administered substance, or improper use. The nurse in charge is expected to closely monitor the machine to prevent these tones from sounding and to remediate the situation immediately if it nevertheless occurs. If there is no nurse present while a patient is connected to a beeping machine, this is a problematic situation. Excerpt 3 shows an intricate example of monitoring while walking and of organizing clinical work as a result. A staff member (A) shares an aural noticing with a walking companion (B) that leads to a joint visual check. B then passes the information on to a third person (C), opportunistically encountered while walking, and orients her attention and action toward his own noticing. In this excerpt, Jessica, who was probably heading in the direction of the day hospital anyway due to the beeping machine, refers to it as she enters the room, and then the noise stops.

A final practice consists of monitoring while passing adjacent rooms and engaging in direct interaction with colleagues inside these rooms based on an opportunistic noticing. In Excerpt 4, Christopher engages in talk with the nurse Suzi as he passes by the consultation room in which she is working (Figure 5).

Excerpt 4: clip 101

```
 1        (7.9)[I-1]
 2   Cho: you're still stuck there?[I-2]
 3        (0.7)
 4   Suz: <(yes)/(me) I'm stuck he:re> but five minutes still.
 5        (0.3)
 6   Cho: >all ↓right< [so ] you're ↑reaching the end?
 7   Suz:               [(I)]
 8        (0.3)
 9   Suz: in five minutes ↓yeah.=
10   Cho: =okay.[I-3] (.) I'm ↑going to see with the
11        others.
12        (1.0)
```

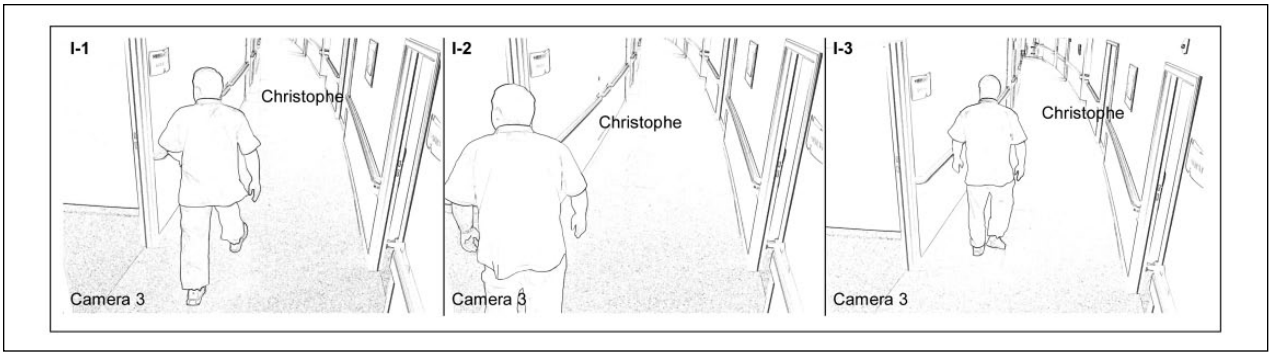

Figure 5. Excerpt 4: clip 101.

Christophe gazes into the consultation room as he passes by at a brisk pace (I-1). He abruptly stops, takes a few steps back, and starts talking to Suzi, who is inside the room (2, I-2). From lines 4 to 7, Christophe is standing in front of the consultation room entrance talking to Suzi. He then resumes walking and closes the exchange with her as he walks away (10-11, I-3). The opportunistic practice at work in this excerpt allows the head nurse to monitor and orient to the activity of a nurse in an adjacent room while himself still in the corridor, the use of "still stuck there" (2) implying that she has stayed in the room longer than is suitable. Both participants share information about her present and future doings, contributing to a common awareness of the clinic's functioning and coordinated action with regard to it (see Lê Van, 2015, for a full analysis of this excerpt).

Because the staff keeps most of the doors in the clinic open, activity going on in the rooms can be observed from outside them, at least in part, and talk, sounds, and smells coming from one room or corridor can easily be perceived in other parts of the clinic as well. This section shows some practices by which passing-by staff members exploit these spatial features to monitor what is going on in adjacent rooms while engaged in away-oriented walk.

Although we are concentrating here on the perspective of the passing-by staff, it is obvious that the same spatial features allow staff inside the rooms to engage in monitoring as well. Through this mutual monitoring, coworkers stay aware of what is happening in the spaces surrounding the one they are currently located in. By monitoring these activities and acting upon their noticings, staff build a common distributed workspace in spite of the division into rooms as well as awareness of the clinic's operational status.

Goal-Directed Walking Monitoring Routines

The clinic is an environment that staff can travel through in different ways for the purpose of work and work coordination (see Ingold & Vergunst, 2008, for a detailed discussion of ways of walking in other workspaces). Some are walking routines that are specifically oriented toward monitoring the state of the clinic and taking action if necessary. They may include the practices presented in the previous section—such as performing visual checks of adjacent rooms—but constitute activities in themselves that are goal-directed instead of opportunistic. We call these activities routines because they also tend to be performed recurrently, by specific personnel, at specific moments in time in connection with their work responsibilities.

"Roaming" consists of walking through corridors and going into one or more rooms, taking stock of whatever is going on—the patients being treated in the clinic and the staff taking care of them—but without intervening in the patient care unless asked (see Bellotti & Bly, 1996, on the "walkabout" practice in a consulting firm). The triage nurse typically does this "clinic-reading walk" as she arrives at the clinic at 10:00 a.m. The roaming routine provides her with relevant information before she starts taking in new patients and assessing when, where, and by whom they are going to be attended to, or dealing with side requests for help from her colleagues (fieldwork notes_day 3).

When performing "action-seeking walking," a staff member wanders through the clinic trying to find out where the action is, ready to get involved in it. Thus, when nurses or aides have finished a task and have some free time, they may wander through the clinic looking for another one that needs to be taken care of (something also observed by Kjaer & Raudaskoski, 2014, in a Danish hospital). In Excerpt 5, Jessica arrives from the clinic's reception office to the junction of Corridors B and C (Figure 6).

Excerpt 5: clip 1107

```
 1        (5.2)I-1 (3.8)I-2 (1.0)
 2  Jes: °can I help you Christine?°I-3
 3  Chi: ↑it's going okay
 4        (1.0)
 5  Jes: [°tell me huh? I don't have°              ]=
 6  Chi: [°(it's) on the way (.) it's ni:ce of you°]=
 7  Jes: =dressings °for ↓the moment°
 8  Chi: I >I'll go take a short break [take this chance<]=
 9  Jes:                               [°yeah:°          ]=
10  Chi: =>to go have another ↑coffee.< (0.6) °to rest a
11       little.°=
12  Jes: =°it it's okay°
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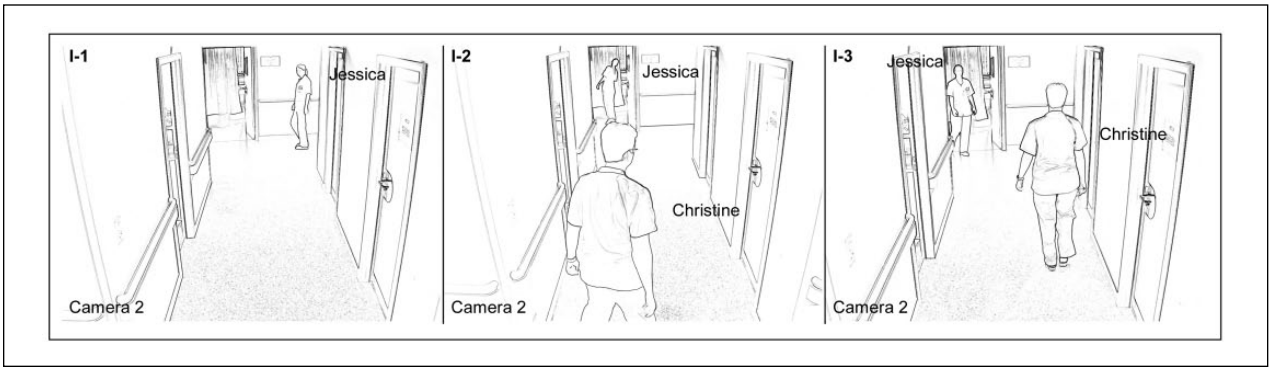

Figure 6. Excerpt 5: clip 1107.

At first, Jessica peers in the direction of the urgent-care room as if trying to figure out whether something requiring her intervention may be going on there (I-1). She then looks inside the day hospital room (I-2). As Christine enters Corridor B, Jessica turns, walks toward her, and offers to help with anything Christine might need (2, I-3). It transpires from what she says that Jessica does not have any work to do in her assigned workstation, the wound-dressing room. Her walking is oriented toward inspecting the clinic's operations and identifying a place where she can make herself useful. With their corridor exchange, Jessica and Christine inform each other about their respective activities. The exchange also serves to organize future action as Jessica offers her help to Christine, who in turn invites her to take a break (see Lê Van, 2015, for a full analysis of this excerpt).

Another monitoring routine is performed early in the morning when the head nurse engages in "rallying walk." He travels through the clinic, locating the staff members, making sure that they know their corresponding positions for the day, and giving them the necessary instructions. As everyone hears what he says as he goes along, the team learns who is there for the day as well as their whereabouts. In Excerpt 6, Christophe walks with Jessica from Corridor D to Corridor A, then through Corridor B and toward the break room, engaging with several other staff members along the way (Figure 7).

Excerpt 6: clip 1103

```
 1  Cho: Jes?
 2       (0.5)
 3  Jes: yes:?
 4       (1.8)
 5  Cho: um::: do you manage all by yourself today?
 6  Jes: >°yes yes°<
 7       (0.4)
 8  Cho: huh (0.3) me I'm in urg:[I-1] Carole isn't here
 9       (0.2)
10  Jes: °mh°
11       (0.8)
12  Cho: all right? >°but if you need ↓anything you let me know°<
13       (0.3)
14  Jes: all ri:ght=
15  Cho: =we will be on the move
16  Jes: [°all right°      ]
17  Cho: [there's Christine] who is here[I-2]
18       (0.7)
19  Jes: Daniel he's there
20  Cho: Daniel[::         ]
21  Lis:       [>no he must] be< in the break room in fact
22  Cho: [I-3]DANIEL HE'S THERE?
23       (1.2)
24  Chi: ↑yes he's in the back.
25  Cho: all right. okay.
```

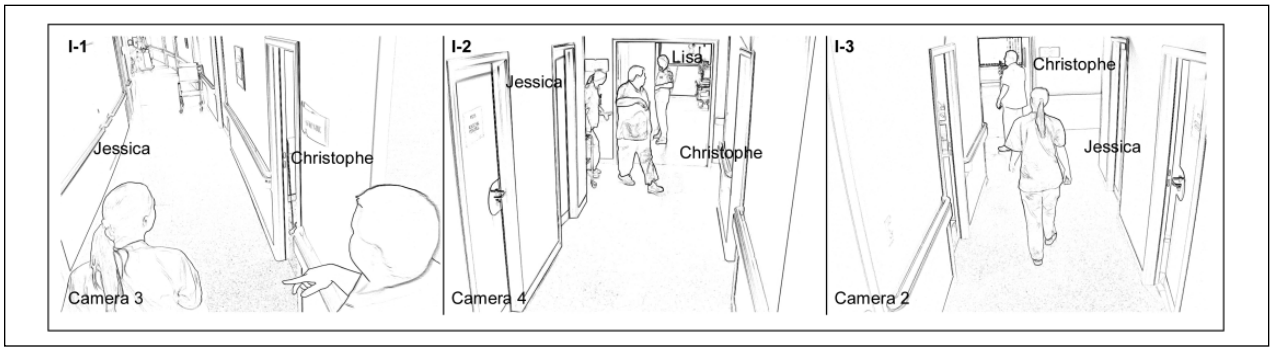

Figure 7. Excerpt 6: clip 1103.

At the beginning of the excerpt, Christophe calls to Jessica and catches up with her in Corridor D. As they turn into Corridor A (I-1) and walk down it, Christophe tells Jessica what is expected from her and the other staff members who are at the clinic for the day (5-14). He warns her that the staff will need to move around because a colleague is absent (15). As Christophe refers to Christine, another nurse, he and Jessica both look inside the urgent-care room (I-2) and Jessica asks Lisa, an aide who is inside the room, where Daniel, the senior resident, is (19). Christophe, still followed by Jessica, poses the same question to Christine as they pass by the day hospital (22, I-3). Christine responds (24) and Christophe and Jessica head to the break room where Daniel is said to be. In this excerpt, the head nurse thus performs a walking routine that serves to check and make known the presence and positions of the staff at the beginning of the day, and to prepare them for the work ahead.

During the day, the head physician and the head nurse remain for long periods in their own offices or outside the clinic, occupied for instance by administrative work. As they "return to the fray," they engage in "patrolling walk." For the head physician or the head nurse, this routine consists of systematically monitoring activity in the clinic's spaces, engaging with patients and staff as he proceeds, and addressing problems that he may become aware of in the process (see Bittner, 1990, on police beating their territory, Hall & Smith, 2013, on welfare officials patrolling their area, and Luff & Heath, 1998, on a foreman walking through a construction site). In Excerpt 7, the head physician, Leonard, walks from his office through Corridors C, D, A, and B and then back to his office (Figure 8). During this tour, which lasts 3 minutes 24 seconds, he interacts with several patients in the interior waiting room, two nurses (Audrey and Suzi), and two fellow doctors (Mathieu and Marie, the latter over the telephone). We transcribed only parts of the rather lengthy exchanges.

Excerpt 7: clip 100

```
 1  Leo: =>you are waiting for urgent-care?<=
 2       (...)
 3  Leo: <so I'm nevertheless gonna see the- for wound-dressing
 4       because sometimes on: Wednesday now °it's done on the
 5       third [floor°]I-1
 6       (...)
 7  Leo: Audrey?I-2
 8  Aud: ↑yes
 9  Leo: °(I have) a question) ( )° [( )        ]
10  Suz:                            [an in↑take?]
11  Leo: °there's a man who is waiting for wound-dressing here in
12       the room° °°there isn't ↑wound-dressing anymore°°=
13       (...)
14  Leo: ( )I-3
15  Mat: of course (don't worry) huh (0.9) I'm looking but there's
16       nothing like that.
17       (...)
18  Suz: <yeah so I don't know if Marie said that it wasI-4 a
19       hosp but::
20       (0.9)
21  Aud: °and as a ↑result (0.5) um:: <the triage> (0.4) <of the
22       torticollis> (0.8) ↑if:: there isn't anybody who has the
23       time to see it, Leonard he maybe has the time in fact
24       [(to do a)°     ]
25  Leo: [you should just] triage it for me.
26  Suz: ↑yes- ↑yes- all right.
27  Leo: I-5because depending on what it is I can see it °in the
28       office°.
29       (...)
30  Leo: <yes Marie it's Leonard (0.7) ↑mister:: Dupont who-
31       (0.4) that's it >it's a hosp?<
32       (...)I-6
```

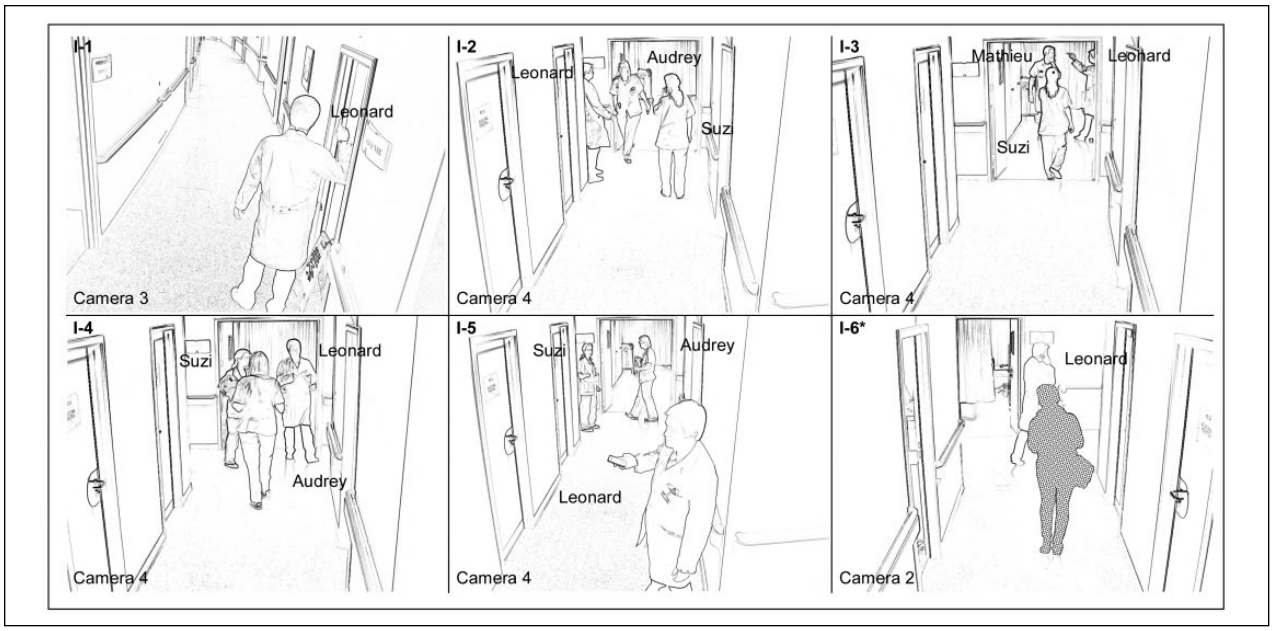

Figure 8. Excerpt 7: clip 100. I-6*: image edited for confidentiality reasons.

At the beginning of the excerpt, Leonard is outside his office and starts asking the patients in the interior waiting room about their status (1). He then goes around this room through Corridors A and D, thus passing by the reception office, the clinic entrance, and the wound-dressing room. As he passes by the door of the interior waiting room in Corridor A, he stops and again talks to the people inside (3-5, I-1). He learns who is there and for what purpose, and reassures them about the handling of their cases. He then proceeds to the middle section of the clinic, where he speaks with Suzi and Audrey about the cases on hold (I-2). He then steps into the urgent-care room to get a glimpse of the activity going on there, and briefly talks with a fellow doctor in the room (14-16, I-3). As he leaves, he again meets with Suzy and Audrey and decides how to move forward (I-4) with the cases on hold and an intake ("hosp," 19) Suzi has meanwhile been dealing with over the phone. As he discusses these items with the nurses, Leonard moves to the junction of Corridors B and C, looks intently in the direction of the clinic's entrance (I-5), and makes a telephone call to a fellow doctor, Marie, to accept the intake (30-31). Audrey returns to the urgent-care room and, as agreed, Suzy picks up the patient waiting to be triaged and Leonard heads to his office (I-6), where he will examine him (see Lê Van, 2015, for detailed analysis of sections of this excerpt). With this "patrolling" routine, the head physician monitors the ongoing activity in the main workspaces of the clinic, responds to any problematic events, and discusses what should be done next with the team. He also makes his presence visible to the patients and staff, displaying and implementing his command over the running of the clinic.

Discussion

Research has shown the prevalence of hospital staff corridor occupations and conversations and pointed to the diversity of their forms and functions (González-Martínez et al., 2016; Iedema et al., 2011; Long et al., 2007). With "mobility work," staff assemble the right configurations of people, objects, and knowledge that are necessary to move ahead (Bardram & Bossen, 2003, 2005). Mobility secures transportation but also provides opportunities for displaying and realizing the units' operational status. As a result, it constitutes an important and adaptable means for building and sharing awareness, something particularly important in an environment of rapidly changing circumstances. As a complement to meetings, written communication, and digital and nondigital artifacts, the monitoring behavior of staff walking around in the unit contributes to "continuous coverage," namely the staff's readiness to take whatever action is necessary for the unit's operation (Randell et al., 2010). Ultimately, on-the-move monitoring behavior may contribute to the coordination, cohesiveness, and productivity of the work team and the quality of care (Marks & Panzer, 2004).

Pursuing the investigation of the practical accomplishment of SA (Heath et al., 2002), this article contributes by identifying and describing specific monitoring practices and routines connected to staff walking through the clinic. These are, on the one hand, observing while on the move, sharing the observations with walking companions and other colleagues, and taking/orienting appropriate action; and on the other, roaming, action-seeking, rallying, and

patrolling walk. We in fact put forward a distinction between monitoring practices (such as visual checks) that are added to the main activity of away-oriented walk, and goal-directed monitoring routines (such as patrolling) that may include the very same practices but constitute main activities in themselves. We thus explore a wide spectrum of monitoring modalities with regard to their conspicuousness (Schmidt, 2002) and flesh out a distinction such as "by-product awareness" and "add-on awareness," the latter resulting from specifically dedicated activities (Randell et al., 2010). The article also evidences the variety of objects subjected to monitoring (Marks & Panzer, 2004): not only people's activities, locations, and availability but also equipment operation and process progress. It also shows how in-passing observations are translated into appropriate action by and large, determining who will do what next. "[C]ollaborative activity in complex organisation environments rests on the participants' abilities to remain sensitive to each other's conduct" (Heath et al., 2002 p. 317). The article provides examples of "nontechnical skills" incorporated in walking around that may contribute to effective team performance (Flin & Maran, 2004). It also adds insight on the ways health care team members collaborate and relate to one another through unscripted communication practices (Conn et al., 2016; Propp et al., 2010). More generally, we hope to shed additional light on what precisely hospital work consists of and how it is practically accomplished through the embodied and embedded conduct of staff members (Heath & Hindmarsh, 2002).

The basis of these empirical contributions is an extensive corpus of videos, supplemented by ethnographic data, collected using a recording setup composed of several suspended fixed cameras and wireless microphones recording simultaneously and uninterruptedly. This setup constitutes a methodological addition to techniques previously employed to capture unscheduled, fleeting, mobile behavior that is particularly sensitive to intrusion, especially in a hospital setting (Büscher, Urry, & Witchger, 2011; Heath, Luff, & Sanchez Svensson, 2007; Iedema, Long, Forsyth, & Bonsan Lee, 2006).

Our research has some limitations. It focuses only on monitoring behavior in the corridors of one single outpatient clinic. Behavior may vary in other environments depending on factors such as the type of clinic, its spatial layout, number of staff, and forms of work organization being implemented. The connection between the monitoring behavior and professional categories, status, and relationships within the team requires additional analysis. The diversity of behavior would have been much greater had we been able to consider staff interactions in which patients and other individuals external to the clinic were also in the corridors. The fact that the staff members knew they were being video-recorded also may have had an effect on their behavior. However, observations collected during extended fieldwork previous to the recording allow us to be confident that staff behavior was natural overall. Not only was staff fully compliant with the study, but routine behavior is also particularly difficult to modify suddenly and consistently in a fast-paced work environment.

Conclusion

We have examined monitoring behavior that often takes place only contingently and therefore may seem trivial, but is nevertheless useful in terms of building SA for staff working in a hospital team accomplishing closely interrelated activities, under inherently changing circumstances, in a distributed workspace. Today, hospitals are effecting changes in terms of organizational procedures, architectural and ergonomic design, and technological equipment with a view to increasing SA and enhancing team performance (Wright & Endsley, 2008). Any improvement-oriented undertaking would certainly benefit from a thorough understanding of how staff move around in the first place and the many functions mobility fulfills, including providing staff with opportunities to monitor the status of the unit's functioning.

Appendix

[ ]	overlapping talk
=	continuous talk
(0.2)	silence in tenths of a second
(.)	micro-pause
.	final intonation
,	continuing intonation
?	rising intonation
:	prolongation of the preceding sound
speci-	cut-off
you	emphasis
°yes°	softer talk
°°yes°°	markedly softer talk
DANIEL	louder talk
↑	rise in pitch
↓	fall in pitch
>yes<	talk is compressed
<everyday>	talk is slowed
<because	hurried start
h	exhalation
(yes)/(me)	alternative hearings
((beeping))	transcriber's description of events
( )	unachievable, likely, or alternative hearing
(...)	talk continues but has not been transcribed

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Note

1. For each excerpt, we provide a few images extracted from the corresponding video clip, with time codes inserted when there is no accompanying talk; the time codes are expressed in minutes, seconds, and frame number (24 frames per second). When there is talk, we include a transcript along with the images; the Appendix lists the transcription conventions. The original French conversations have been translated into English. We have replaced all personal names with pseudonyms. We have inserted superscript references in the transcript at the points corresponding to the images reproduced alongside it. In the body of the article, the indications I-1, I-2, I-3, etc., refer to the images and the numbers in parentheses refer to the transcript lines.

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