



UNIVERSITY OF GOTHENBURG

## Gothenburg University Publications

### **Inquiries of the body: Novice questions and the instructable observability of endodontic scenes**

This is an author produced version of a paper published in:

**Discourse Studies (ISSN: 1461-4456)**

Citation for the published paper:

Lindwall, O. ; Lymer, G. (2014) "Inquiries of the body: Novice questions and the instructable observability of endodontic scenes". Discourse Studies, vol. 16(2), pp. 271-294.

<http://dx.doi.org/10.1177/1461445613514672>

Downloaded from: <http://gup.ub.gu.se/publication/196392>

Notice: This paper has been peer reviewed but does not include the final publisher proof-corrections or pagination. When citing this work, please refer to the original publication.

## **Inquiries of the body: Novice questions and the instructable observability of endodontic scenes**

Oskar Lindwall & Gustav Lymer

This study explores questions posed by students in response to live video broadcasts of dental treatments. The aim of the study is to show and discuss the reflexive relationship between the questions, what they were occasioned by and how they are responded to. Procedures and anatomical features, that for the seminar leader are unproblematically seen in endodontic terms, repeatedly present problems for the students. Visible but unrecognized shifts in the dentist's work, for instance, provide occasions for questions of the form 'What is he doing now?'. In the midst of an ongoing procedure, questions tend to be formulated as noticings that elicit instruction either about some detail of the dentist's actions or about what a generic 'one should' or 'should not do', what 'frequently' happens and so on. It is shown, however, that the movement between specific here-and-now features on the one hand and more general issues on the other characterizes the entire scope of the relevant material, particularly because the seminar leaders' answers tend to place even minute details within more general endodontic considerations.

**Keywords:** Conversation analysis, dentist education, ethnomethodology, questions, video

## Introduction

When I speak of accountable my interests are directed to such matters as the following. I mean observable-and-reportable, i.e. available to members as situated practices of looking-and-telling. (Garfinkel, 1967: 1)

In the following, a general interest in the observability and reportability of action will be placed in the context of a particular professional and educational situation – seminars organized around live video broadcasts of endodontic procedures (i.e. root canal treatments).

Instructional settings actualize issues related to the observability and reportability of action in ways that ordinarily competent conduct rarely does (e.g. Goodwin, 1994; Lynch and Jordan, 1995). A situation such as this, in which students are watching and attempting to make sense of a professional performance under the guidance of a seminar leader, gives ample access to practices of looking-and-telling, to observability made problematic through the asymmetric distributions of specialized competence and to explicit efforts to make the objects and events on the screen instructably observable to the attending cohort of students. A particularly perspicuous interactional environment in which to explore these practices is novice questions requesting the specification or elaboration of some aspect of the unfolding scene. The demonstrations provide the students the opportunity to witness anatomical structures and pathological features in the details of the broadcasted images. They also make it possible for the students to observe formal procedures as they are contingently deployed in and through the embodied actions of the dentist. However, in order to see general structures and formal procedures in the details of the particular and the concrete, the students need instruction and guidance. Although the seminar leader continuously describes, explains and explicates what is shown on the video, there are still aspects that have not been unpacked and that catch the students' attention. In the investigated seminars, students regularly pose questions that are occasioned by the broadcasted procedure and that are noncontiguous with the seminar leader's previous talk. With this as an empirical starting point, the study sets out to show the systematic and reflexive relationship between the design and timing of student questions on the one hand and the visual details of the unfolding endodontic scene on the other.

In the last decade, a number of ethnomethodological studies have used video-based methodologies to investigate instructional arrangements in medical education. Koschmann and Zemel, as well as Sanchez Svensson and colleagues (Koschmann et al., 2011; Sanchez Svensson et al., 2009; Zemel and Koschmann, this issue; Zemel et al., 2011), have examined surgical work in which trainees with varying levels of experience assist in the actual performance of surgical operations. Hindmarsh (2010; Hindmarsh et al., 2011) has studied dental education demonstrations in which students stand by and monitor the work of a professional dentist. Moving from the small-scale participation of individual students to more large-scale situations, Mondada (2003, 2011) has investigated demonstrations of surgical procedures in large auditoriums, including live video broadcasts of the operations. A common interest of these studies is the examination of educational practices designed to circumvent the limits of traditional lectures and text- books. In one way or another, the studies all take a detailed interest in how “occasioned viewings” are critical to enable trainees to see and inspect certain phenomena at a particular moment, but also for their ability to follow and make sense of the progressive

accomplishment of the operation and the deployment of a procedure' (Sanchez Svensson et al., 2009: 891). In relation to this body of research, the present study contributes by investigating how 'occasioned viewings' are made relevant through student questions. More specifically, it focuses on the interconnections between what the students' questions are occasioned by, the way the questions are designed and how the questions are responded to.

With this interest, the study also connects to research on the position, design, function and sequential organization of questions, especially studies of talk-in-interaction that address how questions can be understood in terms of the epistemic design, access and status of the interlocutors (e.g. Heinemann et al., 2011; Heritage, 2012; Park, 2012; Raymond, 2010). In this literature, it is repeatedly demonstrated that 'while the communicative function of questioning is typically associated with a particular syntactic form – the interrogative – it is a well-documented fact that there are other kinds of syntactic forms that routinely "do questioning"' (Freed and Ehrlich, 2010: 4). Particularly important to this study is the observation that

when there is consensus about who has primary access to a targeted element of knowledge or information, that is, who has primary epistemic status, then this takes precedence over morpho- syntax and intonation as resources for determining whether a turn at talk conveys or requests information. (Heritage, 2012: 3)

When a student in the investigated seminar says something in first position to the whole class (that is, an utterance that is not a response to one of the seminar leader's questions or something that is said to a fellow student), it is recurrently heard as requesting rather than conveying information, regardless of its grammatical format. Moreover, this being an educational setting, the students' contributions are constantly monitored for the ways in which they can be used as starting points for instruction. In line with previous work, the collection of student questions could have been approached by using the grammatical format as a starting point – contrasting questions formulated as polar interrogatives with those formulated as polar declaratives (e.g. Heritage, 2012; Park, 2012; Raymond, 2010), for instance. As the organizational principle of this study is somewhat different, being based on 'occasionality' (Adato, 1980) and 'notability' (Gerhardt, 2012) rather than grammatical design, the sets of questions that are presented here might not appear fully distinctive from the point of view of morphosyntax. Nevertheless, an attempt in this study has been to show that an organization of the instances in terms of what they are occasioned by and what they are aimed at eliciting instruction about reveals interesting features of the designs of both questions and answers.

## **The setting**

The study is based on video recordings of a five-week course in endodontics that took place in the sixth semester of a Swedish dental education programme. As part of this course, groups of seven to 14 students followed a series of live video broadcasts of treatments that were performed in an adjacent room. Three video-cameras had been installed for this purpose: one was connected to a microscope and recorded





**Figure 1.** The top image (#1) shows the two screens and the seminar leader. The screen on the left shows the dentist as he prepares to make an impression of the tooth. The three images at the bottom show St1 as she leans forward, narrows her eyes (#3) and points towards the screen (#4).

a magnified view of the teeth and what the dentist was doing, another camera was fastened to the operatory light and captured the face and mouth of a patient's and a third was placed on the wall and gave a wide view of the room. In the seminar room, a projector displayed one of the three camera views (selected by the dentist) at the same time as another projector displayed x-ray images and other information from the patient's record (see Figure 1, top). Because the demonstrations were part of a course in endodontics, the camera connected to the microscope had a particularly important role: it gave the students the opportunity to look into the tooth, see the root canals and follow the details of the endodontic procedure (Figure 2). The voice of the dentist was broadcasted by a set of speakers in the seminar room. The seminar leader was wearing a headset, which made it possible to communicate with the dentist if the microphone was turned on, but it did not allow the dentist to hear the students. In this way, the instructional setting sits somewhere between the large-scale auditorium investigated by Mondada (2003, 2011) and the one-on-one interaction between a student and a dentist investigated by Hindmarsh (2010). On the one hand, the students were unable to ask questions directly to the dentist performing the procedure (although their questions and concerns were sometimes relayed by the seminar leader), and the dentist was unable to monitor any claims or displays of student understanding. On the other hand, there was a great deal of interaction occurring between the seminar leader and the students. Among other things, this meant that the dentist could focus on the patient, without simultaneously having to attend to the students.

In addition to the three cameras installed in the dentist's surgery, two more cameras were used to capture the interaction in the seminar room for research purposes. One of the cameras recorded the front of the seminar room, including the two screens and the seminar leader, whereas the other camera recorded the students. In addition, the video streams from the surgery were captured and stored. The empirical material for this study consists of 12 video-recorded and transcribed seminars, each spanning about one hour in length. In total, the seminars contain about 500 student questions. Some of the questions are closely tied to the seminar leader's talk, asking about the topics raised in it or requesting clarification or explanation of technical terms. To some extent, these questions resemble what might occur in virtually any educational situation in which an expert is lecturing to novices (e.g. Park, 2012). The questions that are in focus for this study, however, are those that are direct responses to what is happening in the live video broadcast and non-contiguous with the immediately preceding talk. It is impossible for the seminar leader to unpack everything that is shown, said and done in the dentist's surgery or to forecast all inquiries that the video may occasion among the students. The seminar leader's talk, furthermore, regularly strays from the details of the video to explicate general topics or pose questions. In such cases, student questions serve to reorient the seminar leader to the video, that is, to the details of the endodontic work or to other visual features. The video recordings contains about 100 instances of questions posed by students as responses to the broadcasted video, and together with the interactional, visual and material circumstances in which the questions are found, this collection makes up the empirical basis of the study.

## Analysis

As an introduction to the collection, consider the following example (Excerpt 1; transcript conventions can be found in the end). At the same time as the seminar leader (TEA) poses a question, the attention of one of the students (St1) is visibly caught by something on the screen. Before she poses the question, she leans forward, wrinkles her eyebrows and narrows her eyes as if she has a hard time making out what is being shown (see Figure 1).

**Excerpt1: END100330[00:14:58.17]**

101           (2.0)  
       deH:    >>--prepares to make an impression of the tooth-->>

102   TEA:    wha-=what what does one do if- if one does n:ot find the canal  
               va-=va va gör man om- om man nu #1 in:te hittar kanalen

103           then, n' one has to put a post there?  
               då, #2 å man #3 måste få dit en pelare?

      slG:       ...-moves head forward, looks intensively at video->>

104           (1.5)

105   St1:    >wha- wha-< can't we- what's he doing [now?]  
               >va- va-< kan vi inte- va gör #4 han [nu?]

      slH:   .....----, , , , points towards video

106   St2:   [what's] he doing now?  
   [va gör] han nu?

      teG:   ...-turns to video->>

As the dentist prepares to make an impression of the tooth, the seminar leader is turned towards the students (and therefore away from the video) and asks a question of a general character. The students, however, do not respond in line with the conditional relevancies set up by the seminar leader's question. Instead of aligning with the familiar initiation-response-evaluation (Mehan, 1979) sequence projected by the seminar leader's talk, two students in overlap pose a question with a different interactional and topical agenda (see Linell and Luckmann, 1991). Given this, it is notable that none of the questions in the collection are treated as disruptions, interruptions or unjustified requests, which could be simply turned down. The seminar leaders do not claim or display that they have been interrupted or ignore the students' questions (see Bilmes, 1997). Neither do they respond to the questions as potential complaints, critiques or corrections that require excuses or justifications. Instead, they answer the students in ways that draw on and further explicate the endodontic scene and the work of the dentist. Like many other instructional settings, the role and responsibility of the seminar leader is to address what the students are unable to follow. Not all educational settings, however, allow students to similarly interrupt the teacher or to introduce new topics of their own.

One thing that differentiates these seminars from other educational settings is, of course, the live broadcasts of dental treatments. The students are not only expected to follow what the seminar leader says, but also to watch and follow what is shown. In the context of live television broadcasts of football, Gerhardt (2012) investigates sudden unannounced shifts from conversation between viewers to what is happening in the game. The shifts are regularly instantiated through interjections that index the relevance of the scene. It is demonstrated that the interruption of other viewers is unmarked if what is happening is regarded as notable – and, consequently, the notability of the situation accounts for the interruptions. In the seminars investigated in this study, the students' questions similarly serve to reorient the attention to something that is notable in the scene. Like a game of football, the broadcasted endodontic work continually proceeds according to its own logic, which is sometimes relatively detached from the ongoing stream of talk (see Mondada, 2011: 218). There is also a sense in which the unfolding images have precedence over other things being talked about. As the seminar leader needs to consult the screen in order to see what the students mean, the questions cannot simply await their proper turns without risking the loss of their indexical ground. This is underscored by the students' uses of *nu* 'now' (lines 105 and 106), which indexically tie the questions to the unfolding scene at the specific moments of their production.

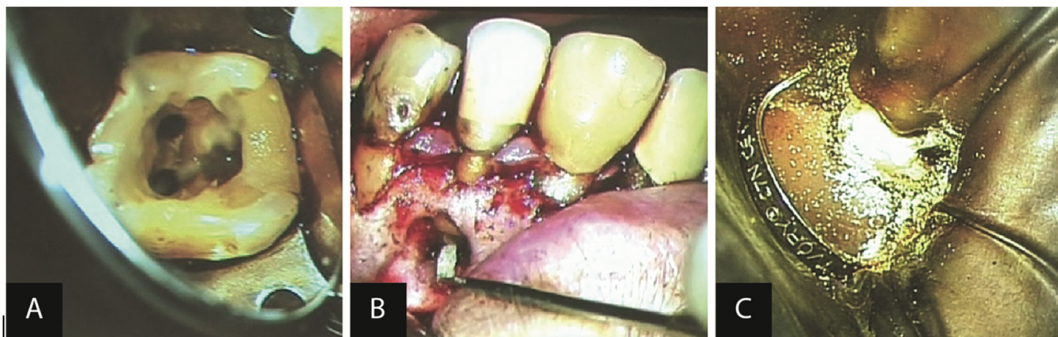
In the rest of the article, we first present a set of questions in which students inquire about objects, structures or features in the video: 'What is X?' and 'Is that X?' both work toward the identification or recognition of some particular (or possible) 'thing'. A central difference between these two types is that the polar interrogative 'Is that X?' also provides a candidate answer. Second, we turn to questions about the dentist's actions in the form of 'What is X doing now?'. Although these questions in themselves might be heard as indeterminate or open-ended, they are commonly posed in relation to visible shifts in the activity of the dentist, which specifies their contextualized sense. Third, we examine some questions about the dentist's actions that include additional specifications and

candidate understandings in their formulation (frequently, but not always, in the form of polar declaratives, such as ‘But now X isn’t doing Y’). Finally, we turn to questions that address more generic topics. While these questions are occasioned by what is shown on the video, the answer to the question ‘Doesn’t one always have to do X?’ is not similarly found in the visual details of the endodontic scene.

*Objects and anatomical structures: What is X/Is it X?*

The first set of questions concerns the recognition and localization of material objects, anatomical structures and sometimes more unspecific visual features. Similar to what Koschmann et al. (2011: 529) observe in the context of student participation in surgical operations (e.g. ‘Can you see the cystic artery yet?’, Excerpt 3c), the students in these fragments ‘request assistance in recognizing the structure in the scene before them’. It is the endodontic scene that is the source of the question and it is towards this scene that the seminar leader turns for an answer. In order to give an overview of the students’ inquiries, a small set of questions (A–C) is presented, along with the images (Figure 2) that are shown at the moments of the questions’ formulation. Given that the questions are non- contiguous with the preceding talk, they are to be understood in relation to what is shown on the video rather than in relation to what was previously said. These initial questions might therefore provide an initial sense of what it could mean to localize and recognize some ‘cloudy stuff’ (A), ‘those screws’ (B) or ‘the grainy effect’ (C), despite the fact that the questions and images are extracted from their sequential contexts.

- A) n’ what’s that cloudy (stuff) there?**  
 å: va e de där grumliga?
- B) what are those screws sticking out between the teeth (.) there? (1.0)**  
 is it metal sticking out?  
 va ä dom skruvpiggarna som sticker ut mellan tänderna (.) där? (1.0)  
 ä de metall som sticker ut?
- C) the grainy effect, is it just tooth substance that has covered, or?**  
 den gryniga effekten, e de bara tandsubstans som har täckt, eller?



**Figure 2.** From left to right, the images show stills from the video that are connected to questions A, B and C. What is seen as something ‘cloudy’ (A) is specified to be dental debris in the liquid; the ‘metal screws’ (B) are shiny glare in the blood between the teeth; and the ‘grainy effect’ (C) is fragments of tooth substance.

In the students' inquiries about objects and anatomical structures, the most common forms are the wh-interrogative *Vad är X?* 'What is X?' and the polar interrogative *Är det X?* 'Is it X?'. In different ways, questions with these formats take as their starting point some aspect of the visual field and then ask about the identity, nature or character of what is seen. Through the grammatical design and the ways in which the questions are embedded in the technical vocabulary of the profession, the 'epistemic stance' of the student posing the question is indicated (Goodwin, 1986; Heritage, 2012). While A only minimally displays an ability to see that something is cloudy or dark, C proposes a candidate answer and involves the use of technical terms that potentially communicate the students' displayed lack of knowledge as a limited aspect of things otherwise known. It is not only the onlookers' endodontic expertise that limits what they can make out of the images. Artefacts of the video recording and other disturbances also shape what sense is made of the things visible on the screen (Lindwall et al., 2014). The initial question in B becomes reformulated from a question about screws to a question about whether what is seen is in fact metal. As it turns out, there is no metal to be found, and it is not clear for the seminar leader what in the recordings the student refers to. What appears to be metal for the student turns out to be reflections in blood produced by the light falling from the operating lamp.

Although the images in Figure 2 each represent only one frame of the broadcasted video, the exact positioning of these images in their respective sequences might be of less importance. Both the hands and instruments of the dentist are busy working. There are also slight movements by the camera and the body of the patient. Nonetheless, what is shown just before the questions are posed, what the seminar leader sees when he or she turns towards the video and what is then used as visual grounds for answers and explanatory remarks are relatively stable. In these three cases, what occasions the questions – the cloudy stuff, those screws or the grainy effect – remains in the picture throughout the entire sequences. This can be contrasted with Excerpt 2 (and Figure 3), in which there are relevant changes to the visual field before the question is answered.

**Excerpt2: END100311[00:14:40.12]**

201 St1: his hands in the(h) mouth(huh) I think, and it feels like-  
#1 hans händer in i(h) mun(heh) #2 tycker jag, o de känns såhär-

202 TEA: m: [m:]

203 St2: [what]'s the black (stuff)? =is it old amalgam or?  
[va] e de svarta? #3 =e de gammal amalgam eller?  
teG: ...-turns from students to video-->

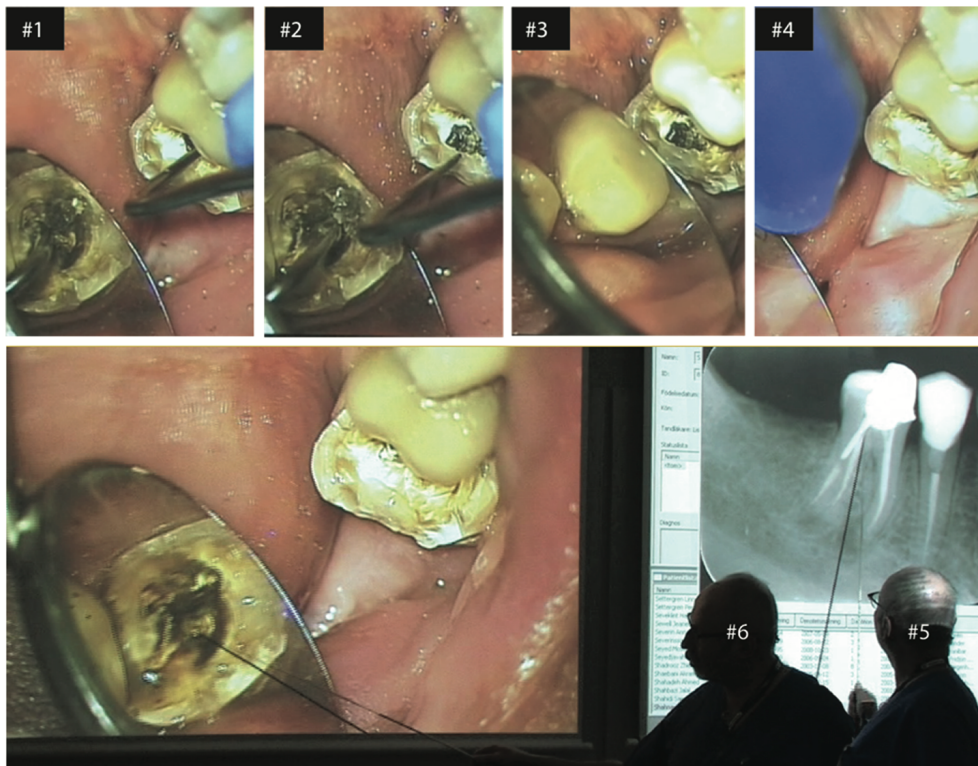
204 (1.2)

205 TEA: yes it- (.) I would think that this is eh: (.) somewhat  
>ja: de e- (.) #4 jag skulle tro< #5 att de här eh: (.) lite  
teG: .....-looks at x-ray-->  
teH: .....--points at pin on x-ray-->

206 different pin so it's corrosion products,  
annorlunda stift så de e #6 korrosionsprodukter,  
teG: ..-looks at video-->  
teH: >--,,,...---points at video-->>

207 St2: °ah:°





**Figure 3.** The dentist is removing old amalgam with a probe (#1 and #2). As a mirror is used (bottom left of images), an apical view of the tooth is also provided. In #2, the amalgam comes loose (the tip of the probe points at it). While the piece of amalgam is still seen in #3, it is then removed by a suction unit (#4) shown in the top left corner. The (same) seminar leader first points along the pin (#5) and then around the area in the tooth that has been discoloured by corrosion products (#6).

- 208 **TEA:** that one gets you know corrosion (0.4) and the corrosion products  
 så man får alltså korrosion (0.4) och korrosionsprodukterna  
*teG:* ..--looks at students
- 209 **go into the dentin canals** (.) .hhh and in that way one discolors  
 går in i dentinkanalerna (.) .hhh å på de viset så missfärgar man
- 210 **the tooth**  
 tanden
- 211 **(2.0) (0.2)**  
 ..--looks at video-->>
- 212 **TEA:** eh: but gloves you see, one started to use gloves  
 eh: men handskar alltså, man började använda handskar

Before this sequence, the seminar leader and some of the students have had a longer discussion of the perceived advantages and disadvantages of using gloves (this is what line 201 revolves around, and the discussion continues for a number of turns after 212). The student's question in line 203 is non-contiguous with the preceding talk and works to reorient the attention from the discussion to the visual features of the live video broadcast (compare Excerpt 1). As a concrete result, the gaze of the seminar leader shifts from the cohort of students to the screen. In order to answer the student's question, the seminar leader needs to localize and recognize what the student is talking about. In relation to this, one can note the combination of questions posed by the student in line 203. It is not only

that the student substitutes a *wh*-interrogative with a candidate understanding or that this makes a confirmation, rather than an answer, conditionally relevant. The two questions also elaborate one another. It is one thing to look for and recognize some 'black stuff', and it is another thing to search for 'amalgam'. When, as in this case, these inquiries are combined, the teacher is provided with additional resources with which to find the referent in the image. Similarly, in examples B and C, the 'grainy effect' and 'those screws sticking out between the teeth' (example C) both localize something in the visual field, which is further specified by the candidate recognitions 'metal' and 'tooth substance'.

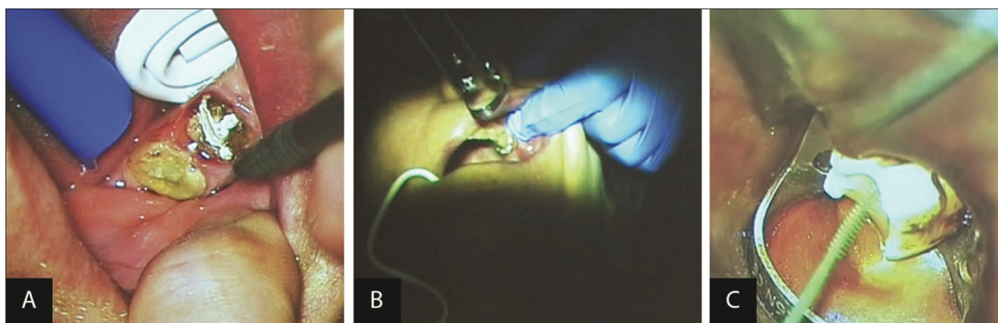
Despite the two formulations of the question in Excerpt 2, both the localization and recognition turn out to be somewhat problematic. There are at least two things that could be referred to as 'the black stuff' in the broadcasted images – old corrosion products and old amalgam. When the student in this sequence begins to pose the question, a dark piece of amalgam is just coming loose. This is clearly visible in the broadcasted video as the piece of amalgam is moved back and forth (Figure 3, #1–2). At the moment when the dentist turns towards the video, the piece of amalgam can still be seen, but it is not as visually salient because the dentist is not working with it anymore (Figure 3, #3). In line 205, the initial confirmation (which is aligned with the reformulated polar question) comes to a halt, and the 'I would think' projects the restarted and upcoming answer (which conforms with the design of the student's initial *wh*-interrogative) as something less than immediately obvious. The reformulation is timed with the piece of amalgam being removed by the dental suction unit (Figure 3, #4). While the physical removal of the amalgam might account for the dentist's reformulated answer, it is also possible that the corrosion products are more notable to the seminar leader on other grounds as well. The issue of notability does not only connect to what is observable, but also to what the parties find to be relevantly reportable. In contrast to the amalgam, the nature of the corrosion products does not seem to be that straightforward (a short time after the sequence in Excerpt 2, the seminar leader asks the dentist for her opinion). By turning towards the x-ray rather than the video (Figure 3, #5), the seminar leader shows that the answer – or at least partial clues to an answer – is to be found outside the broadcasted video. By means of talk and gesture, both equally tied to what is shown on the screen, the seminar leader connects the 'somewhat different pin' (205–206) portrayed on the x-ray as the source of what becomes classified as 'corrosion products' (208) in the video. Having classified the black stuff, the seminar leader yet again turns to the students and formulates how corrosion discolours the tooth (209–212) in a more general lecture format. While both the question and its answer are clearly occasioned by and tied to this particular tooth, with its somewhat unusual pin and its resulting corrosion products, the seminar leader's expanded remarks detach from the specifics of the case and thereby formulate a more general lesson.

In terms of sequence organization, the answer could be seen as constituted by two components. The question, as a first pair part that initiates a new sequence, is initially responded to with a second pair part consisting of multiple turn construction units. After having received an acknowledgement through the state-changing receipt 'ah', the answer then continues in the form of a post-expansion that deals with more generic issues. This format, in which the seminar leader first deals with the specifics of the student's question – by, for instance, naming what the student sees – and then continues to unpack issues that are made relevant through the question, is typical of the setting and can also be found in other instructional settings (e.g. Park, 2012). While it is possible to find regularities

regarding the sequential organization of the investigated sequences, the ‘situated practices of looking-and-telling’ involved are most varied and closely tied to what occasioned the questions. In this first section, the interest has been questions and answers that aim to relate conceptual knowledge of anatomical structures to the look of things as ‘everyday work objects’ (Koschmann et al., 2011: 529). While some questions are designed as wh- interrogatives and others as polar declaratives (or a combination of both – as in B and Excerpt 2), in all cases, the seminar leader must locate and recognize what the student is talking about in the visual details of the endodontic scene. In the next section, the recognizability of the dentists’ actions will be at issue, and as will be shown, this is closely connected to the temporal and sequential organization of the demonstrated procedures.

*The recognizability of the embodied procedures: What’s X doing now?*

On a general level, the broadcasted demonstrations regularly involve the same series of steps or phases. Initially, the dentist interviews and examines the patient. Next, a rubber dam is placed on the tooth to isolate it from potential contaminants. The tooth is then prepared, and the length of the root canal is measured. After this, the root canal system is cleansed, shaped and disinfected. Finally, the tooth is sealed with obturation materials. While each of these steps is known to the students, they are not familiar with all the technical procedures and practices involved in each step. In addition, they might have trouble recognizing what is shown in terms of procedures, practices and so on or, conversely, seeing the formal aspects of endodontology in the contingencies of the particular case. The questions in this section concern the recognizability of the embodied conduct of the dentist and how this recognizability is tied to its position in the ongoing treatment. The section is organized in a similar way as the previous one: a few questions (A–C) are presented, together with the associated images from the broadcasted treatment. This is followed by an analysed sequence. It is considerably more problematic to link the images in Figure 4 with the questions here. Even with extensive competence in endodontics, it may be difficult or impossible to discern what the students are talking about from these images alone. The procedures as they are enacted and shown consist of purposeful movements with a clear temporal dimension that static images are unable to capture. In this sense, the questions localize their referent temporally rather than spatially (‘What’s he doing *now*?’ rather than ‘that cloudy stuff *there*’).



**Figure 4.** From left to right, the images show stills from the video connected to questions A, B and C. In the first image, the dentist has just started to remove gum tissue. In the second, the dentist has removed the dental dam and started to reposition the clamp (upper left) after an initial failed attempt. In the third image, the dentist is using a brush in order to remove dental debris.



- A) **what's he doing now?**  
 va gör han nu?
- B) **what's he doing now (what kind of thing)?**  
 va gör han nu för nåt?
- C) **what (.) why is he doing like that?**  
 va- (.) varför gör han så?

The contextualized sense of questions such as *va gör han nu?* 'What's he doing now?' might not be as open as is suggested by their form. These questions are posed either when the dentist shifts from one procedure to a visibly new one or when the dentist could be seen as doing something unexpected. Given that they are timed with these shifts and the way that the use of 'now' introduces a contrast to what was previously done, these questions are regularly heard as questions about the new procedure that is being initiated. Reflecting this, the seminar leader (or, as is the case in some of these instances, a fellow student) often answers by just naming the general procedure being initiated by the dentist. As a result, responses to these open questions tend to be short, halting at the provision of the name of the procedure, although they sometimes include additional expansions and explications.

Depending on the placement of the question 'What is he doing now?', however, it could also be heard as asking about reasons and rationales and thereby be met with lengthy accounts. Question B is occasioned by the dentist removing the rubber dam before the actual root canal treatment has begun. This is not something that is expected to happen when everything goes according to plan. As the student can most likely see that the dentist is removing the dam, the question is not so much what he is doing but why he is doing it now. Responding to this, the seminar leader starts a longer explanation of what could go wrong and how the dam might start to leak. While C starts out as a what-question, it becomes reformulated in a way that is explicitly oriented towards the rationale behind the dentist's actions – in this case, why he is using a brush in a way that the students are not used to and that is new to the seminar leader as well. Thus, depending on its placement in the procedure and whether the procedure is to be classified as routine or something out of the ordinary, the question 'What is he doing?' now can be heard in different ways. Excerpt 3 is formulated when the dentist has started to remove the crown.

**Excerpt3: END100315[00:03:57.00]**

- 301 **TEA:**     **you haven't done that yet either?**  
                   de har ni inte gjort ännu heller?  
           teG:                                 *...turns from students to video-->>*
- 302 **St1:**     **=after [the easter]**  
                   =efter [påsk]
- 303 **DEN:**                 **[n'one] taps a bit     [carefully] so one does not break**  
                               [å man] knackar lite [försiktigt] så man inte har sönder  
           teG:                                 *-nods several times-----*
- 304 **TEA:**   **[°okay°]**
- 305 **DEN:**     **the crown (0.7)**  
                   kronan (0.7)  
           deH:     *-starts to tap on the crown which produces a clicking sound-->*

307 St2: what's he doing now?  
va gör han nu?

308 St3: °removing the crown is he doing°=  
°tar bort kronan gör han°  
s3G: .....-looks at St1-->  
deH: >---,,,,,

309 St4: =m=

310 St2: =ah::  
s3G: >--..

311 Tea: now he's tapping away the crown here.  
nu knackar han bort kronan här.

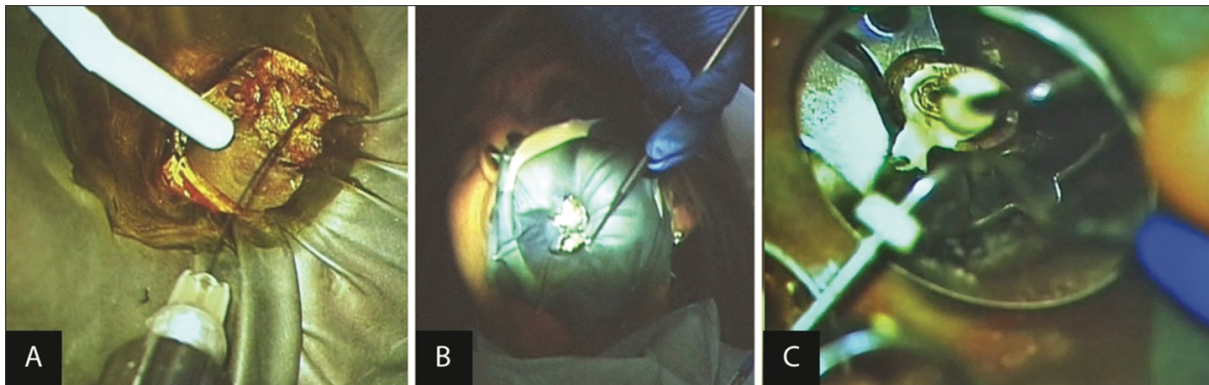
Excerpt 3 illustrates how the dentist's embodied work, like the anatomy and pathology of a patient, offers the possibility of being seen but not relevantly recognized; that is, the student might see the hands of the dentist moving, but not see these movements as the endodontic procedure they embody. The dentist can thus perform, in plain view of the students, the work for which 'removing the crown' is a proper endodontic gloss, without this gloss presenting itself as a relevant formulation for all the attending parties. It begins at a point at which the seminar leader has been talking about a subject relatively disconnected from the video (anaesthesia) and poses a question about this to the students. At the same time as one of the students responds to the seminar leader's question, the dentist begins a new procedure and provides a comment on what he is doing and how (303). Overlapping the dentist's talk, the seminar leader acknowledges the response she has received from the student. The fact that there is a conversational exchange that overlaps with the dentist's talk might be a contributing reason for the question posed in line 307. It is possible that the student not only has problems discerning what the dentist is doing but also what he is saying. In this case, the answer to the question is formulated by a fellow student. Although students occasionally answer other students' questions, they do not expand or elaborate on their replies as the seminar leader did in Excerpt 2. Thus, students' replies are found where short answers would suffice. One can further note that the student's answer is not taken as the conclusive or official one, but as a candidate. Although the answer is acknowledged by another student (308) and with the change of state token *ah* by the student posing the question, the seminar leader still provides an answer of her own (310). The teacher reuses the previous answer, but substitutes *knackar bort* 'tapping away' for *tar bort* 'removing', thereby providing a slight specification of the embodied actions via which the removing is done.

In this case, the brief 'removing the crown' provides a sufficient answer to the student's question. The problem for the student is not a lack of visual access to the dentist's actions or a lack of knowledge of what 'removing the crown' means as an endodontic concept, but rather a failure to recognize the dentist's visible actions as the known procedure. As previously discussed, however, there are other cases in which simply naming the procedure would not make similar sense. When the dentist removes the rubber dam before the actual root canal treatment has begun (Figure 4, B), the dentist's conduct is not

in accordance with normal procedure, and the question ‘What is he doing now?’ solicits an account similar to those typically projected by a why-interrogative. The problem is not that the student is unable to see that the rubber dam is removed, but that she ‘cannot make “typical” sense of the causes of, or motives for, the event’ (Bolden and Robinson, 2011: 96). While why-interrogatives are sometimes used to communicate a challenging stance towards the event, this depends on ‘the degree to which the account solicitor has (and is recognized as having) epistemic grounds from which to assess the event as accountable’ (Bolden and Robinson, 2011: 116). When a student here asks ‘What (.) Why is he doing that?’ (Figure 4, C), it marks the actions of the dentists as notably different from what might be expected to happen without the question being heard as a challenge to the appropriateness of these actions. This also holds for the questions in the next sections.

*Noticed details of the dentist’s actions: ‘But now X is(n’t) doing Y’*

The competent grasping of what happens in the broadcasted treatment presupposes the capacity to match general knowledge about the procedure with what is seen at a particular point in time. For the students, this involves the upholding of a coherent gestalt whole of the broadcasted operation, the seminar leader’s narration and their previous experiences and understandings. As a consequence, grounds for posing a question might emerge when the students see something that does not fit into this whole. In watching the dentist’s actions and finding something that conflicts in some way with what is expected, the students are presented with the problem of figuring out whether their expectations are at fault, whether this dentist is at fault or whether some contextual feature can account for the discrepancy between the expected and the observed. Questions might also emerge when they are unable to discern the relevant details necessary to produce the gestalt in the first place. While the seminar leader could be seen to be in the business of unpacking the seen but potentially not noticed details of the unfolding treatment, there is a sense in which the students notice details that are not directly seen in the video – in which they address details that, in one way or another, are ‘specifically missing and specifically problematic’ (Livingston, 2000: 252; cf Lindwall et al., 2014) for their attempts to follow the treatment.



**Figure 5.** From left to right, the images show stills from the video connected to questions A, B and C. In the first image (A), the dentist is anaesthetizing in the root canal. In the second image (B), the dentist has started to probe the canal. The third image (C) shows the dentist just seconds before she starts to apply the sealer.

- A) **but now he's anesthetizing straight (.) down into the root canal,**  
 men nu bedövar han rakt (.) ner i rotkanalen,
- B) **but then he means that he is ready with the cavity preparation since he's beginning to probe or?**  
 men då menar han att han e färdig me kavumpreparationen  
 eftersom han börja sondera eller?
- C) **but now- she hasn't placed that sealing (.) thing yet?**  
 men nu- hon har inte satt dit den där tättnings (.) grejen än?

By offering candidate understandings of some noticeable features of the dentist's actions, these declaratively posed questions (A–C) provide specifications beyond the *wh*-interrogatives found in the previous section. Rather than asking for a name of a procedure just initiated by the dentist, the students are here formulating some aspect of what the dentist does, has done or will do. Whether the dentist is anesthetizing 'straight down into the root canal' (A) or whether he is beginning to probe, which 'means that he is ready with the cavity preparation' (B), is hard to settle based on the broadcasted images alone. Using a negative declarative syntax, the question 'but now – she hasn't placed that sealing (.) thing yet?' (C) puts forward something that has not yet been performed and marks this negative event as notable and in need of further explication. While 'the formulation of an occurrence as an absence' has been observed to be a way of complaining (Schegloff, 1996: 171; see also Schegloff, 1988), the student's noticing here is rather tied to her effort to understand the particular actions being carried out on this occasion by this dentist in terms of generalized conceptual and procedural understandings of endodontics.

One can further note that all three questions are prefaced with a *men* 'but'. In other settings, prefaces of this kind have been noted to signal various forms of disjunction, such as objection, rejection or disagreement (Rendle-Short, 2007; Steensig and Asmuss, 2005). Given that the dentists are specialists in endodontics, whereas the students have no clinical experience at all, the questions here are not heard as challenging the conduct of the dentist. Rather, they can be understood as managing the disjunction involved in directing the seminar leader toward some aspect of the procedure that the students find unclear. If these questions challenge anything besides the students' own background expectancies, it is potential tensions between what they see in the video and what they have previously been taught. An illustration of this is found in Excerpt 4.

**Excerpt4: END100315[00:58:34.00]**

- 401 TEA: **so that it is you know fantastic lo- follow ups one does here in**  
 så att de e ju fantastiska lå- uppföljningar man gör här i
- 402 **Scandinavia then.**  
 Skandinavien då.
- 403 **(3.5)**  
*teG: ..-turns from students to video-->*
- 404 St1: **but now he did- he didn't put anything (.) calcium- hydroxide, (.)**  
 men nu gjorde han- han la ingenting (.) kalcium- hydroxid, (.)
- 405 **now he just put ordinary gutta-percha and sealer,**  
 nu la han bara vanlig guttaperka å sealer,

406 (0.8)

407 TEA: **yeah that's right but calcium hydroxide you have as a filling**  
a just de men kalciumhydroxiden har du som ett inlägg  
teG: >..-turns to stl-->

408 **between the appointments**  
mellan behandlingsgångerna

409 St1: **yeah but I thought since it started to bleed there.**  
ja men ja tänkte eftersom de började blöda där.

410 TEA: **.hh okey, but then it was surely the case that it- it stopped,=**  
.hh okej, men då va de ju säkert så att de- de stannade till,=  
teG: >..-turns to video-----..-turns to st-->

411 St1: **=yeah=**  
=ja=  
teG: ..-turns to video->

412 TEA: **=now- I was talking, so I did not see it, but eh (.) had it**  
=nu- ja pratade så att ja såg inte de, men (.) eh hade de  
teG: >..-turns to stl->

413 **continued to bleed and such things then he would have closed down**  
fortsatt blöda å så där då hade han ju stängt ner

414 **for today and placed new calcium hydroxide**  
för idag å lagt ny kalciumhydroxid

415 St1: **yeah**  
ja

416 TEA: **then, and waited. so it surely indicates that it only- that he**  
då, å väntat. så att de tyder säkert på att de bara- att han gick  
teG: >..-turns to video-..-turns to x-ray-----turns to stl->  
teH: .....-points at x-ray---->

417 **went a bit too far outward with some file. it's enough that you**  
lite för långt ut me nån fil. de räcker ju att du  
teH: >..-makes a series of filing gestures->

418 **don't measure the file before you go down, n'then one goes**  
inte mäter av filen innan du går ner, å så går man

419 **outside, when it's as open as it probably was here.**  
utanför då, när de e så öppet som de förmodligen va här.  
teH: >---.....

As in A-C, the questions in Excerpt 4 (404, 409) are prefaced with a *men* 'but'. In this sequential context, the preface could be understood in terms of what Mazeland and Huiskes (2001) observe of the Dutch connective *maar* 'but': it can be used as a 'resumption marker' to return to and resume a previously abandoned line of talk. About 20 minutes before this sequence, the teacher had talked about how calcium hydroxide can be used to kill bacteria and fill the canal, thereby hindering the reproduction of more bacteria. Then, about five minutes before this sequence, the seminar leader returned to the topic of calcium hydroxide. As explained to the students, if blood keeps emerging from the root canal, the dentist may have 'gone too far apically'; in other words, blood can indicate that the bottom of the root canal has been punctured, making it possible for bacteria to leak in.

If the bleeding does not stop and the dentist is unable to 'keep the root canal dry', he or she should not continue with the root canal filling. Instead, the dentist should use calcium hydroxide as a temporary filling and have the patient return at a later date. Moving on to a completely different topic – why it is easier to conduct endodontic research in Scandinavia than in the United States (a topic that is closed at line 402) – the issue of calcium hydroxide, as well as the details of the ongoing procedure, is then abandoned for a few minutes.

The student's formulated noticing of an absence 'now he did- he didn't put anything (.) calcium- hydroxide' (404) can thus be heard against the background of what has previously been said. While the question is not posed until the teacher has stopped talking and turned towards the screen, there is a sense in which the position of the question is tied to the ongoing procedure rather than to the seminar leader's talk. Because the whole point of using gutta-percha and sealer is to fill the root canal, it is impossible to properly apply calcium hydroxide after the obturation materials are in place. Noting that the dentist has 'just put ordinary gutta-percha and sealer' (405) in the canal therefore implies that the use of calcium hydroxide is no longer an option. After having confirmed the student's observation, the teacher's 'but calcium hydroxide you have as a filling between the appointments' (407–408) could relevantly be heard as a correction of the presuppositions implied in the student's questions. Not simply accepting the (mis)understanding ascribed to her, the student expands on the background to her inquiry. It is not that she has not understood that calcium hydroxide is used between appointments, but that she has seen blood in the tooth, which implies that it actually would be relevant to postpone the completion of the root canal treatment to a later appointment.

In the production of an answer, the relative knowledge and position of the two parties is explicitly accounted for. On the one hand, the student had visual access to what the dentist has done and seen, while the seminar leader had her back towards the screen and only subsequently saw the results of the dentist's actions (see Pomerantz, 1980, on Type 1 and Type 2 knowledgables). On the other hand, the seminar leader and the dentist performing the treatment are specialists who share an expertise in endodontics. The dentist could therefore be expected to act in ways that would be rationally intelligible and predictable to the seminar leader: 'had it continued to bleed and such things then he would have closed down for today' (412–414) and his not doing this 'surely indicates that it only- that he went a bit too far outward with some file' (416–417). Finally, one can note a shift of pronouns in the seminar leader's answer: from talking about what *han* 'he' (the dentist) has or would have done to what a more general *man* 'one' or *du* 'you' would have done in such situations. As pointed out previously, such gradual shifts reflect a massively present feature of the talk during these seminars, including the students' questions: the particularities of the ongoing stream of endodontic action is recurrently used by students, seminar leaders and the dentists to make linkages with various forms of generalized understandings of endodontics.

*Technologies and techniques: 'Does(n't) one always have to do X?'*

The previous sections have examined questions directed at, first, material objects, anatomy and pathology, and second, the dentist's actions. This last section concerns questions that are formulated not as requests for information about what is now happening on the video, but as inquiries about endodontic procedures and techniques more generally. Like

the details discussed in the previous section, the students ask about things that are not immediately visible to them in the video. Still, asking about what a generic 'one' should or could do or what sometimes or usually happens is quite different from asking about the details of what has been done or what materials have been used. Most importantly, these questions could be answered without necessarily consulting the details of the broadcasted images. Questions about risks, frequencies, possible alternative tools, rules and guide- lines, etc. primarily require the mobilization of experiences and expertise, not the consultation of the particularities of this operation. As the questions and their answers are very loosely connected to the video, and in order to save some space, no images are provided.

- A) **but he's painting- but one still does that on each (.) side of the wall, sort of?**  
men han penslar upp- men man gör ändå de på varje (.) sida av väggen liksom?
- B) **does it happen that this staple crushes the tooth it's placed in?**  
händer de ibland att den här klammern krossar tanden den sitter i?
- C) **isn't there a risk that one pulls it up again when one (.) pulls down then pulls up?**  
finns de inte en risk att man rycker upp den igen när man (.) drar ner så drar upp
- D) **a question (.) when there's a strange bend like this, couldn't one use the mechanical file then?**  
en fråga (.) när de e en sån här konstig böj kan man inte använda den maskinella filen då?

This set illustrates questions that take the form of general inquiries about what a generic *man* 'one' (A, C, D) should do in various situations; what might 'sometimes' (B) happen; whether there is a 'risk' (C) in doing something; what one might do instead (D) and so on. In addition to asking about what 'one does' and 'does not do', that is, the techniques of endodontic surgery, these questions include references to technologies and their properties, again transcending the details of what is now happening on the screen and orienting towards generalized lessons and understandings. While the answers to these questions do not necessarily need to rely on the video, because they ask about how one generally does or does not proceed, all of them are still prompted by events on the video. Fragment A is illustrative in this regard because it clearly shows the connection between these generalized questions and the actions of the dentist. It begins with a noticing of an action, 'but he's painting-', which is cut off by the posing of a question about what 'one' does in this type of situation. Similarly signalling a tight connection with the video, fragment B refers to *den här klammern* 'this staple'.

Some of these generalized questions are designed with a negative interrogative syntax (C-D), which implicates the presence of background expectancies that are somehow thwarted or put into doubt by what the expert in front of the students is doing. Again, the design of questions must be understood in relation to the relative knowledge and position of the various parties. While negative interrogatives are produced and treated as assertions in some circumstances – displaying the belief that the positive is correct (Heritage, 2002; Heinemann, 2008) – it is clear that the students are in no position to make such assertions here. While the questions suggest that the student has a position on the issue, they are

searching for confirmation and perhaps clarification rather than mere agreement (see Heritage, 2012: 18). Like the questions in the previous section, this can also be achieved through negative declaratives or, as in Excerpt 5, negative declaratives followed by a tag.

Excerpt5 END101021[00:34:26.00]

501 (16.3)

502 St1: one doesn't have to have gloves when doing root canals or?  
man måste inte ha handskar när man rotfyller eller?

503 DEN: .h no li:ke (.) you know in that case you would (ju) have steri:le  
.h nä asså: (.) du vet i så fall skulle du ju sitta mä steri:la

504 gloves.  
handskar.

505 (0.5)

506 St1: yeah  
ja

507 DEN and one doesn't ha:ve that cause then- you don't remain sterile  
handskar. å de gö:r man inte för då- du förblir inte steril ändå

508 anyway during work. rather the important thing is that you make  
ändå under arbetet. utan de viktiga ä att du ser till

509 sure to work in such way that ensures that you never .hh (.) come  
att ar:beta på ett sånt sätt som gör att du aldrig ..h (.) kommer

510 close to those- those parts of the instruments that go down in  
nära dom- dom delar av instrumentet som går ne:r i:

511 the cana:l.(.) .h so that <you touch the handle and such>, there  
kana:len. (.) .h så de du <ta:r i handtaget å liknande>, där e de

512 t's (ju) okay cause that part never touches (0.5) down on the  
ju okej för den delen kommer aldrig i kontakt (0.5) ner i

513 tooth. so it is really important to be aware of this (0.7) n' it's  
tanden. så de ä j:ätteviktigt att hålla koll på detta (0.7) å de e

514 also cause of that that I said that it's important that these  
därför också, som jag sa att de e viktigt att dom här

515 instruments are on the tray so that one should never go down with  
instrumenten ligger upp på brickan så att man aldrig ska gå ner

516 one's fingers down on the tray cause then we've contaminated  
mä sina fingrar i botten på brickan för då har vi ju kontaminerat

517 (0.5) ehm: the tray  
(0.5) ä::h bricklocket

518 (7.5)

519 cause it is very easy that- that if one has gloves on that  
för de ä ju väldigt lätt att- att äh om man sitter mä handskar att

520 that one thinks (.) that it is a false security for instance but  
man tror att (.) att de e en fa:lsk trygghet till exempel men

521 it isn't more sterile, and we turn and look at the screen and look  
de e ju inte mer sterilt, å vi vänder ju oss om å tittar på datorn



522        **into (0.4) the x- then we would have to change to**  
           asså går in på (0.4) på rönt- då skulle vi behöva byta till

523        **sterile gloves between each thing that we lea:ve (.) ehm the field**  
           sterila handskar mellan varje sak som vi läm:nar (.) ö::h fältet

524        **(.) then (0.4) so many think that just because one has**  
           (.) då (0.4) så att många tror ju att bara för att man har

525        **gloves on one can do whatever one wants.**  
           handskar på sig då kan man göra va man vill.

Noting that the dentist is not wearing gloves, the student in Excerpt 5 asks, 'One doesn't have to have gloves on when doing root canals or?'. The question thus requests information about general rules and guidelines that are not discernible from this particular case: this dentist is not wearing gloves. How does that relate to what is generally done and enforced in endodontic practice and prescribed by operative norms and regulations? The seminar leader provides a quick answer in the negative and then goes into a lengthy expansion on the topic. In fact, it continues beyond what is included here. The excerpt is a clear illustration of the structure of first pair part, second pair part, acknowledgement marker and post-expansion that we have seen throughout the material and that has previously been demonstrated by Park (2012).

While the question is phrased as a polar declarative followed by the tag *eller* 'or', and the seminar leader's initial 'no' provides an answer in a sense, the issue of general guide- lines and endodontic considerations regarding gloves go beyond what a quick 'no' can communicate. Merely stating that one does not have to wear gloves leaves unarticulated whether wearing gloves is ideal but not required, discouraged but not forbidden, or an optional but inconsequential choice on the part of the individual dentist. The fact that there is indeed much more to say becomes evident as the seminar leader's extended turn unfolds. The excerpt also illustrates the centrality of the seminar leader's talk in this set- ting. While we have focused on student questions as sequence-initiating actions and touched on the seminar leader's answers to these questions to some extent, the seminar leader's narration forms an ongoing stream of explication and instruction, oscillating between a more general lecturing format and detailed on-line explications of the here-and-now actions of the dentist.

As noted, student questions often work to pull the discussion from the former to the latter, while the seminar leader tends to return to generalization in the post-expansions, which typically follow the reply. This tendency should not be taken as an indication of differing orientations on the parts of the students and the seminar leader, the students to detail and the seminar leader to generalization, as it were. Rather, throughout the seminar, the video and the seminar leader's narration build up a gestalt whole composed of the actions and events along with their verbal explication, and it is mainly towards this whole that students' sense-making practices are directed. Students listen to what the seminar leader says to make sense of what is seen on the video and, in many cases, find in the seen the indexical ground of the said: the local embodied work intended by an articulation of a general procedure, for instance, or the resources by which to respond to the occasional instructional question.

## Conclusion

Returning to our general interest in the observability and reportability of action, it can be noted that all the questions we have examined represent efforts on the part of students to elicit instructions by which an unfolding endodontic scene of actions and objects can be rendered intelligible. Events that for the seminar leader are unproblematically recognizable as this or that endodontic procedure repeatedly present a problem of interpretation for students. A given sequence of actions performed by the dentist, which is naturally accountable as 'removing the crown' under the assumption of endodontic competence, may represent indeterminate movements of the hands and instruments for students, and something 'cloudy' in the broadcasted image of the tooth actualizes otherwise taken-for-granted aspects of professional vision. The practices of looking and telling examined here do not only take the form of the identification and categorization of actions and objects, the provision of, as it were, proper endodontic glosses of phenomenal details. In order to understand what they see on the screen, the students need to assemble a visual and temporal coherence in which what the dentist is doing is understood in terms of what has been done before and in terms of the next actions that predictably follow. The understandings brought to bear in the situation thus have a strong procedural character in the sense of trusting the dentist's actions to be predictable in relation to generalized and more-or-less scripted procedures within endodontic treatments. The active sense-making practices engaged in by the students are evident in the frequent presentation of candidate understandings and inquiries into noted absences or departures from perceivably normal procedures. In addition, and as evidenced by the students' generalized questions and the seminar leader's lengthy post- expansions, the participants are oriented not only towards the observability and reportability of the particular procedure being broadcasted, but also towards the skills and knowledge for which the students will eventually be held accountable.

The juxtaposition of clinical performance with instructional talk provides a setting in which the student, as Sanchez Svensson and colleagues (2009: 892) argue, 'not only develops a familiarity with particular practices and procedures but becomes sensitive to, and aware of, the contingent deployment of those procedures with regard to particular cases'. In the case of trainee participation in surgical procedures, however, the moments of instruction allowed by the ongoing work of the surgical operation tend to be brief and oriented towards building a retrospective-prospective sense of the local procedure being conducted; the talk recorded in those studies, as a consequence, is thoroughly indexical, with recurring references to *this*, *that*, *here*, and so on. In contrast, the seminar leaders in this study frequently leave the details of 'particular practices and procedures' for instructional talk that is relatively disconnected from the video. This difference can be accounted for by the separation of the instructor and the operating specialist, which characterizes the endodontic video seminar; because there is no real requirement that the talk of the instructor should be designed and positioned so as to preserve the integrity of the procedure (see Hindmarsh, 2010; Mondada, 2011; Sanchez Svensson et al., 2009), a relative degree of freedom is introduced. To borrow a phrase from Garfinkel (1967: 26), student questions can be answered via long series of explicative accounts, which develop the broadcast 'as a branching texture of relevant matters'. While students sometimes find reasons to request further clarification, seeing

some incompleteness in the seminar leader's instructions, the identification of relevant incompletenesses and the initiation of explicative expansions are more often than not taken as the responsibility of the seminar leader. There is a sense in which the incompleteness of an instruction is most acutely visible from within the body of knowledge that informs both the performance of the endodontic procedure and its instructional explication. Practical limits are set, however, by the students' work of making sense of the unfolding video; following and understanding the broadcasted operation recurrently takes precedence over general lessons, as evidenced by the many student questions that break the flow of the seminar leader's talk.

## Acknowledgements

We would like to express our gratitude to the instructors and students of dental education at the University of Gothenburg. We would also like to thank Trine Heinemann, Lorenza Mondada and Claes Reit for very insightful comments on an earlier version of this article.

## Funding

This work was supported by the Swedish Research Council (Nr: 2010-5225) and conducted within the University of Gothenburg Learning and Media Technology Studio (LETStudio).

## References

- Adato A. (1980) 'Occasionality' as a constituent feature of the known-in-common character of Topics. *Human Studies* 3: 47-64.
- Bilmes J. (1997) Being Interrupted. *Language in Society* 26: 507-531.
- Bolden GR and Robinson JD. (2011) Soliciting accounts with why-interrogatives in conversation. *Journal of Communication* 11: 94-119.
- Freed AF and Ehrlich S. (2010) 'Why do you ask?': The function of questions in institutional discourse. Oxford, UK: Oxford University Press.
- Garfinkel H. (1967) *Studies in ethnomethodology*, Englewood Cliffs, NJ: Prentice-Hall.
- Gerhardt C. (2012) Notability: The construction of current events in talk-in-interaction. In: Ayaß R and Gerhardt C (eds) *The appropriation of media in everyday life*. Amsterdam: John Benjamins Publishing Company, 47-77.
- Goodwin C. (1986) Audience diversity, participation and interpretation. *Text* 6: 283-316.
- Goodwin C. (1994) Professional vision. *American Anthropologist* 96: 606-633.
- Heinemann T. (2008) Questions of accountability: yes/no interrogatives that are unanswerable. *Discourse Studies* 10: 55-71.
- Heinemann T, Steensig J and Lindström A. (2011) Addressing epistemic incongruence in question-answer sequences through the use of epistemic adverbs. In: Stivers T, Mondada L and Steensig J (eds) *The morality of knowledge in conversation*. Cambridge: Cambridge University Press, 107-130.
- Heritage J. (2002) The limits of questioning: Negative interrogatives and hostile question content. *Journal of Pragmatics* 34: 1427-1446.
- Heritage J. (2012) Epistemics in action: Action formation and territories of knowledge. *Research on Language & Social Interaction* 45: 1-29.
- Hindmarsh J. (2010) Peripherality, participation and communities of practice: Examining the patient in dental training. In: Llewellyn N and Hindmarsh J (eds) *Organisation*,

- interaction and practice: Studies in ethnomethodology and conversation analysis*. Cambridge, UK: Cambridge University Press, 218-240.
- Hindmarsh J, Reynolds P and Dunne S. (2011) Exhibiting understanding: The body in apprenticeship. *Journal of Pragmatics* 43: 489-503.
- Koschmann T, LeBaron C, Goodwin C, et al. (2011) "Can you see the cystic artery yet?" A simple matter of trust. *Journal of Pragmatics* 43: 521-541.
- Lindwall, O., Johansson, E., Rystedt, H., Ivarsson, J., & Reit, C. (2014). The use of video in dental education: Clinical reality addressed as practical matters of production, interpretation and instruction. In M. Broth, E. Laurier & L. Mondada (Eds.), *Video at Work. Praxeological Studies of Media Production*. New York: Routledge.
- Linell P and Luckmann T. (1991) Asymmetries in dialogue: Some conceptual preliminaries. . In: Markova I and Foppa K (eds) *The dynamics of dialogue*. Hemel Hempstead: Harvester Wheatsheaf., 1-21.
- Livingston E. (2000) The availability of mathematics as an inspectable domain of practice through the use of origami. In: Hester S and Francis D (eds) *Local educational order: ethnomethodological studies of knowledge in action*. Amsterdam: Johan Benjamins, 245-270.
- Lynch M and Jordan K. (1995) Instructed actions, in, of and as molecular biology. *Human Studies* 18: 227-244.
- Mazeland H and Huiskes M. (2001) Dutch 'BUT' as a sequential conjunction: Its use as a resumption marker. In: Selting M and Couper-Kuhlen E (eds) *Studies in interactional linguistics*. Amsterdam: John Benjamins, 141-169.
- Mehan H. (1979) *Learning lessons: Social organization in the classroom*, Cambridge, MA: Harvard University Press.
- Mondada L. (2003) Working with video: How surgeons produce video records of their actions. *Visual Studies* 18: 58-73.
- Mondada L. (2006) Video recording as the reflexive preservation and configuration of phenomenal features for analysis. In: Knoblauch H, Raab J, Soeffner HG, et al. (eds) *Video analysis: Methodology and methods*. Oxford: Peter Lang, 51-67.
- Mondada L. (2011) The organization of concurrent courses of action in surgical demonstrations. In: Goodwin C, Streeck J and LeBaron C (eds) *Embodied interaction: Language and body in the material world*. Cambridge, MA: Cambridge University Press, 207-226.
- Park I. (2012) Asking different types of polar questions: The interplay between turn, sequence, and context in writing conferences. *Discourse Studies* 14: 613-633.
- Raymond G. (2010) Grammar and social relations: Alternative forms of yes/no initiating actions in health visitor interactions. In: Freed AF and Ehrlich S (eds) *'Why do you ask?': The function of questions in institutional discourse*. Oxford, UK: Oxford University Press, 87-107.
- Rystedt H and Sjöblom B. (2012) Realism, authenticity, and learning in healthcare simulations: Rules of relevance and irrelevance as interactive achievements. *Instructional Science* 40: 785-798.
- Sanchez Svensson M, Luff P and Heath C. (2009) Embedding instruction in practice: contingency and collaboration during surgical training. *Sociology of Health and Illness* 31: 889-906.
- Schegloff EA. (1988) Goffman and the analysis of conversation. In: Drew P and Wootton T (eds) *Erving Goffman: Exploring the interaction order*. Cambridge, MA: Polity Press.

- Schegloff EA. (1996) Confirming allusions: Towards an empirical account of action. *American Journal of Sociology* 102: 161-216.
- Schegloff EA. (2007) *Sequence organization in interaction*, Cambridge, MA: Cambridge University Press.
- Zemel A, Koschmann T and LeBaron C. (2011) Pursuing a response: Prodding recognition and expertise within a surgical team. In: Goodwin C, Streeck J and LeBaron C (eds) *Embodied interaction: Language and body in the material world*. Cambridge, MA: Cambridge University Press, 227-242.