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## **“Do you have another Johan?” Negotiating meaning in the operating theatre\***

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### **Abstract**

This paper discusses language use at a workplace in a context of instability and diversity. Its focus is on the operating theatre, where communication is an integral part of complex, collaborative tasks, impacting on patient-safety, staff well-being and overall quality of health care. In the operating theatre health care professionals gather to work on the recurring task of surgical operations, in teams that exist only for the duration or parts of the task. Not only do the members of these unstable teams have different professional backgrounds, such as surgery and nursing, they also draw on different, social, cultural and linguistic resources. The paper shows how this instability and diversity which is so characteristic of contemporary society plays out in the moment-by-moment use of language at the operating table. On the basis of prolonged fieldwork in a London hospital and a unique set of audio- and video-recordings we show how surgeons formulate requests and how nurses and surgical trainees disambiguate these requests on the basis of their prior experiences with surgical instruments and equipment, the surgical procedure, and, crucially, the surgeon’s ‘idiolect’. We analyze instances where this process of disambiguation is highly successful, as well as examples where it is not. We tease out the strategies that nurses and surgeons deploy to deal with this ambiguity and explore ways to deal with instability and diversity in professional communication.

Keywords: professional interaction; intercultural communication; medical discourse; linguistic ethnography

### **1. Introduction**

A key challenge for the National Health Service (NHS) in the United Kingdom (UK) and other major organizations across the world in the years to come is to deal with professional communication in unstable and diverse teams—that is, communication between people with diverse professional, social, cultural and linguistic backgrounds who work on recurring tasks, such as surgical operations, in teams that exist only for the duration of the task, or even only for parts of it. Thus these professionals step in and out of newly formed teams, participating in the performance of complex tasks, often with colleagues whom they have never met before. Health care services are increasingly delivered by such transient teams (Finn and Waring 2006). Contingencies inherent in health care (e.g., emergencies), high workloads and reliance on temporary staff, regulatory caps on working hours (e.g. the European Working Time Directive) and demands of the workforce (e.g., working part-time) all contribute to the promotion of flexible and transient team work. The NHS faces an annual turnover of clinical staff of over 20 per cent (Hutt and Buchan 2005), and there are limited opportunities for developing shared frames of reference. Significant parts of this workforce have been trained overseas. About 25 per cent of London based nurses are trained overseas (Buchan et al. 2005), while 35 per cent of all NHS medical staff did their undergraduate training outside the UK (Hutt and Buchan 2005).

The paper discusses how these changing social and economic contexts impact on professional communication and, ultimately, on public service delivery. Previously members of an operating team developed, over the years, a shared language for, e.g., naming instruments, articulating requests and announcing the next step in an operation. Now, they bring different, socially and culturally shaped professional experiences to the team, raising the need for opportunities to produce and retain shared understandings. Thus while there is more diversity in human resources, there are far fewer opportunities to develop a shared language and pass on essential knowledge and expertise to new employees. The paper explores this tension through detailed analysis of audio and video recorded operations at a major teaching hospital in London, seizing a unique opportunity to study communication in a site where it has real consequences for patient-safety, staff well-being, and the overall quality of healthcare (Lingard et al. 2004; Nestel and Kidd 2006; Williams et al. 2007). We begin by reviewing the research that has been done in this area, both in the social and the medical sciences, and set out our own, linguistic-ethnographic approach. Following that we discuss the key features of communication in the operating theatre, focusing on how surgeons formulate requests for instruments and how nurses and surgical trainees disambiguate these requests on the basis of their prior experience with surgical instruments and equipment, the surgical procedure, and, crucially, of the surgeon's 'idiolect'. We discuss examples of instances where this process of disambiguation is highly successful, as well as examples where it is not. We tease out the strategies that nurses and surgeons deploy to deal with this ambiguity and explore ways to deal with instability and diversity in professional communication.

## **2. Researching communication in the operating theatre**

Communication at the workplace is a key concern of applied linguistics (Gumperz 1982; Clyne 1994; Bremer et al. 1996; Di Luzio et al. 2001; Cicourel 2003; House et al. 2003; Stubbe et al. 2003), yet few applied linguists and conversation analysts have gained access to the operating theatre. Catherine Pettinari (1988) researched 'text and talk' in operating theatres. She looked at how surgical trainees learn to write operation reports, having observed the operations that a range of trainees reported on over time. A small number of CA studies are based on audio and video recordings of communication in the operating theatre (Mondada 2007; Svensson et al. 2007; Koschmann et al. forthcoming), yet only in Svensson's work has the interaction between surgeon and nurse been explored. He analyzes how the timely exchange of instruments between nurse and surgeon is achieved in verbal and non-verbal communication. The majority of studies on communication in the operating theatre published in medical journals are based not on observations and audio and video recordings but on what nurses and surgeons themselves report, in interviews (Keddy et al. 1986; Svensson 1996; Snelgrove and Hughes 2000; Gjerberg and Kjølørød 2001; Nestel and Kidd 2006; Williams et al. 2007) or in surveys (Bourhis et al. 1989; MacKay et al. 1991; Gjerberg and Kjølørød 2001; Hojat et al. 2001; Manojlovich and DeCicco 2007). Only Lorelei Lingard c.s. did observational work on communication in the operating theatre and published her findings in journals for medics and nurses (Espin and Lingard 2001; Lingard et al. 2002; Lingard et al. 2004). These findings are based on structured observations of a large number of operations to allow for descriptive statistics of the occurrence of 'communication failures'.

Indeed, there has been very little cross-over between medical and social/linguistic studies of the operating theatre. Linguists and conversation analysts have only had limited access to the

operating theatre as a research site, while medical researchers have had limited access to (and appreciation of) the more fine grained analytical apparatus offered by applied linguistics and conversation analysis to study communication. In all medically oriented studies problems of communication were reported, yet the data collection techniques did not capture any of the details of the interaction within which the problems arose. Indeed many such problems initially go unnoticed, especially by the surgeons and nurses themselves. Much of what nurses and surgeons do is instantiated in the subtle and fine grained detail of body movements such as the positioning of a retractor, or a shift in gaze from operative field to scrub nurse. Thus video analysis produces a much richer and nuanced account of communication than what can be captured on-the-spot and in field notes by researchers, or what can be recollected and re-articulated in interviews with the participants after the observed event.

Our study adopts a linguistic-ethnographic approach, bringing together close analysis of multimodal communication with ethnographically informed analysis of the wider context. Access was gained to a major teaching hospital in London. Fieldwork took place between June 2009 and July 2010. We observed 40 operations, involving 5 Consultant-Surgeons, 5 Surgical Registrars, 5 (Senior) House Officers, 10 Medical Students, 25 nurses and Operation Department Practitioners and 5 Anaesthetists. The operations cover different general surgical procedures, lasting between 45 minutes and 6 hours, totalling approximately 70 hours. The overall time spent observing in theatres exceeds that, covering not only the actual operations but also the preparations and cleaning up in the operating theatre and its adjacent rooms: the prep room, where nurses sort the instruments, and the anaesthetic room, where the anaesthetist puts the patient asleep. Many hours were spent between cases, when often opportunities arose to talk to staff and students. Staff were also seen in coffee rooms and departmental meetings.

The study is based on close collaboration between clinicians and ethnographers. In the first phase of data collection observations were carried out by an ethnographic researcher (Bezemer). In the second phase data was collected jointly by the ethnographic researcher and a surgeon (Cope). We hold regular 'data sessions' with one more surgeon (Kneebone) and a semiotician (Kress), discussing small clips of video recordings of teaching and learning. We have collected audio and video recordings of 10 cases, using a wireless microphone worn by one of the surgeons, and in-built video cameras in the handle of the operating lamp to capture the operative field. We also record the view that is created by the laparoscope (a camera that is inserted into body cavities). We keep field notes of all operations observed, including the 10 cases which were recorded and jointly observed, producing two different sets of field notes. All staff in theatre and all patients involved have given informed consent to collect these data. Ethical approval was granted by the NHS Research Ethics Committee.

The paper uses descriptive and analytic procedures from applied linguistics, social semiotics and ethnography for investigating the temporal unfolding of multimodal communication and its associated social processes in situated encounters (Roberts et al. 2000; Roberts et al. 2003; Wass et al. 2003; Iedema et al. 2006; Kissmann 2009; Bezemer and Jewitt 2009; Heath et al. 2010). The analysis is focused on a) the *participants* of situated encounters in the operating theatre, that is, nurses and surgeons, and their socially and culturally shaped repertoires of communicative resources, their habitual practices, expectations, and identities; b) the *types of activities* in which they engage, their embodied interaction, the objects they use, and the physical surroundings; c) the *institutional context* of the operating theatre and the policies, discourses, and ideologies that shape it (Rampton 2007).

The analysis proceeded through a sequence of steps. Field notes were selected in which observations were reported on communication between nurses and surgeons. Through iterative viewing of the audio and video data instances of communication were selected for close analysis which exemplified emerging themes. *Data sessions* provided opportunities to examine video clips with a multidisciplinary research team, develop preliminary analyses and identify phenomena worthy of more detailed analysis (Heath et al. 2010). We then proceeded to describe ‘key incidents’ (Erickson 1977) and place them “in some relations to the wider social context, using the key incident as a concrete instance of the workings of abstract principles of social organization” (p. 61). The ‘key incident’ we reconstruct in this paper is based on detailed analysis of an *audio clip* capturing what was said by nurses and surgeons during an operation, a *video clip* of ‘communication inside the patient’s body’, involving *hand movements* and handling of instruments by the consultant and his assistants; *field notes* and *photographs* of what happened around the operating table; *documents* circulating in the operating theatre, such as forms and reports; *interviews* with the nurses involved on the following day; and a short *interview* with the consultant, held several months after the operation, in which we checked key aspects of the analysis presented here.

### **3. Communication in the operating theatre**

The operating theatre is a complex site of communication (Lingard et al. 2002; Lingard et al. 2004; Bezemer et al. forthcoming). Most operations involve a team of surgical trainees led by a consultant-surgeon, and a team of specialized theatre nurses usually led by the ‘scrub nurse’, who stands at the operating table to pass instruments from a trolley to the surgeons (see Figure 1). The scrub nurse also communicates with circulating nurses, who bring materials from stock rooms and set up technical equipment around the operating table. Typically, communication between nurses and surgeons involves a consultant-surgeon making a request to the scrub nurse, e.g., “Clip please”. The scrub nurse then responds to this request by passing the requested instrument, and does not use speech in this interactional exchange at all. Often the request is not articulated in speech either. Instead the scrub nurse relies on her ‘intercorporeal knowing’ (Hindmarsh and Pilnick 2007; Bezemer et al. forthcoming), i.e., her ability to read and place subtle cues in the surgeon’s bodily expressions in the context of the unfolding operation, thus anticipating upcoming requests. As the senior theatre nurse at the research site told us, scrub nurses are expected to “watch” the operation carefully.



Figure 1: Inside the operating theatre: the scrub nurse (far left), first assistant, second assistant and consultant-surgeon (far right) at work.

Requests can also come from the consultant-surgeon's trainees, in particular when they are given the chance to lead parts of the operation under the consultant's supervision. The consultant is usually assisted by two assistants. Assistants can be medical students, house officers, senior house officers (SHOs) or specialist registrars. Typically the registrar acts as 'first assistant', while an SHO acts as second assistant. Requests by surgeons usually take the form of imperatives and seldom identify a specific addressee ("Green lights off please"). The few exceptions we recorded ("Have you got some local anaesthetic Miranda?") typically happened at the beginning or end of the operation, when topics of conversation, participant status, turn-taking, et cetera mark a significant change in the definition of the situation. During the operation, however, nomination of addressees is usually implicit. The object of a request implies if the request is directed towards the scrub nurse or someone else in operating theatre. Like the participating surgeons, the scrub nurse is 'scrubbed up', that is, s/he can only touch sterile materials such as the surgical instruments. Material or equipment which is not sterile, such as suction machines, or light switches, cannot be touched by the scrub nurse, and therefore a surgeon's request for changing the set-up of such equipment is, by implication, directed at the circulating nurse(s).

Early announcements of upcoming requests are also common. For instance, when a consultant stated, "I need a rectal washout in a minute" circulating nurses started wheeling in trolleys from the prep room with the necessary kit and a stool for the consultant to sit on. Rather than asking for specific instruments or equipment, the surgeon identifies an activity; the nurses are expected to know which instruments are required for carrying out this activity; and they are expected to take the announcement of the activity as an (indirect) request, not as a statement. The request 'stands for' a preferred sequence of coordinated activities, aimed at making available, at the surgeon's preferred time and place, the tools that this consultant prefers to work with. All of these activities, as well as the formulation that triggers them, vary from surgeon to surgeon. The formulation, 'I need a rectal washout', is a 'metonym', part of the surgeon's 'idiolect' which nurses are expected to learn.

Requests do not always result in the scrub nurse providing that which was requested (Williams et al. 2007). Screens, lights, suction machines, gas dispensers, diathermy machines—all equipment fails to work from time to time, and it is a recurring source of irritation. Typically,

when a surgeon realizes that equipment is failing, the surgeon states it first, by saying something like, “There’s no suction”. This declarative is not only a request to fix it, but also a face-threatening acknowledgement of accountability. Indeed a nurse may have failed to plug in the machine, but equally surgeons may be responsible for gas leaks or even obstructions: The surgeon was actually standing on the tube when he stated “There’s no suction.” Circulating nurses respond to such requests checking the equipment, usually without saying anything. Unwanted responses from scrub nurses are equally face-threatening, and also potentially harmful. A scrub nurse passing the wrong instrument, or passing the right instrument in the wrong way, may lose face, and runs the risk of being positioned as ‘incompetent’; if unnoticed by the surgeon, the wrong instrument may harm the patient. These implications have an important psychological knock-on effect: they cause stress among nurses and surgeons, which impacts negatively on performance and ultimately compromises patient safety (Arora et al. 2010; Nagpal et al. 2010).

An important source of unsuccessful requests, i.e., when surgeons do not get what they asked for, is the name of instruments. There are an infinite number of different instruments, and an infinite number of different names are used by surgeons and nurses to refer to them. The meaning of any of the names used can only be understood in the context in which they appear. There are hundreds of different ‘graspers’, for instance, so that when surgeons ask for one nurses will need to disambiguate the request, drawing on their knowledge of the procedure which is being performed, of the theatre they are in, and of the surgeon’s ‘idiolect’. For instance, one consultant surgeon asked for a ‘middle blade’ during an operation. When the scrub nurse subsequently stared at the instrument trolley, the consultant pointed at one of the retractors and said, “It’s there, look.” The scrub nurse then picked up the retractor and handed it to the consultant. While not entirely idiosyncratic the use of the term ‘middle blade’ is not widespread. There are many different kinds of ‘blades’, including scalpel blades, where ‘middle’ would refer to the size of the blade. In this context, however, the surgeon referred to a particular type of abdominal retractor blade, where ‘middle’ refers to the relative position of the blade. The scrub nurse’s hesitation suggests that she had difficulty disambiguating the request. The consultant then verbally and non-verbally clarified which retractor he wanted.

The variety in naming instruments is higher among surgeons than among nurses. A study which asked surgeons and theatre staff (i.e. nurses and operation department practitioners) to name instruments depicted on photographs showed that

as a group, surgeons’ results were more widely distributed [...]. Theatre staff members were more consistent and scored significantly higher marks than surgeons, reflecting the finding that 75% of theatre staff underwent specific teaching as opposed to 22.6% of surgeons. This knowledge is reinforced daily with repeated instrument counting after each operation. Theatre staff work with a variety of consultants and have greater exposure to different surgical instruments. Conversely, individual consultants and consequently their surgical trainees may operate in a specific subspecialty and may be familiar with a limited range of instruments. (Yeung, Cope et al. 2008:n.p).

One may add to this analysis that as surgeons are in a much more powerful position than nurses they are also in a position to subvert certain linguistic norms. In other settings such as classrooms, for instance, students who have been observed to openly question linguistic norms were the most proficient students in the class. Following Bernstein (1971) and Bourdieu (1977), Jaspert and Ramaut (2000) argue that those students, in particular, who do not belong to the

dominant group (in their case the dominant language community) will increase their chances of symbolic gain and thus improve their position in the class when they accommodate to the norms of the linguistic market.

In the following sections we will analyze these naming and disambiguation practices in more detail. Focusing on one operation, we will describe, first, what the operation entailed, who was involved, and which instruments were used. Second, we will explore examples of ‘successful’ and ‘unsuccessful’ disambiguation.

#### **4. A Surgical operation**

The patient has problems swallowing food. That is symptomatic of achalasia, a condition leading to insufficient or uncoordinated relaxation of muscles in the lower oesophagus. The operation, a ‘Heller’s cardiomyotomy’, involves splitting the ring of muscles where the oesophagus joins the stomach (the so-called GE-junction). The splitting should decrease the muscle contraction and allow food to pass through the lower end of the oesophagus into the stomach. This is done by a laparoscopic or ‘key hole’ procedure. That means that only small incisions are made to reach into the abdominal cavity, using a camera or ‘laparoscope’ to create a magnified view on screens around the operating table. The surgeons look up at these screens as they are performing the operation, and others, such as the scrub nurse, can follow the same view on one of the screens within their sight (see Picture 1). The operation is led by a consultant-surgeon. He is assisted by a first assistant, who is a specialist registrar (who is at least 5 years into his postgraduate surgical training), and a second assistant, who is a senior house officer (who is at least 2 years into his postgraduate surgical training). The second assistant stands on the left side of the operating table, and the consultant and first assistant are on the right side, with the consultant closest to the head of the patient.

The operation proceeds through five key holes, providing openings for five different instruments. A camera is used to create a view of the abdominal cavity. The camera is held by the first assistant, who constantly moves the camera around in order to provide the view required by the consultant. Some of these movements are initiated by the first assistant himself, based on his anticipation of what the consultant wants to see, while others follow from verbal or non-verbal instructions by the consultant. A liver retractor is used to lift the liver. Once the consultant has placed the liver retractor he hands it over to the second assistant, who holds it in this position with his left hand, for the duration of the operation. A grasping forceps or bowel clamp is used to create tension on the muscle which is separated. This instrument is also placed by the consultant, and then handed over to the second assistant, who holds it in his right hand. He needs to hold the instrument in such a way that the right tension is created: too little tension will make the consultant’s job of splitting the muscle difficult, while too much tension may cause bleeding. Throughout the operation the consultant repeatedly repositions this instrument to provide the right retraction, and verbally corrects the second assistant’s instrument handling.

The other two key holes are used to insert the two instruments that are actually used to split the muscle fibre. These two instruments are controlled by consultant. In his left hand, he holds a grasping forceps to explore the focal area. Of the many different grasping forceps available on the surgical instruments market this surgeon prefers to use the ‘Johan’. The jaws of a ‘Johan’ are fenestrated, and only one of the two sides opens up (see Figure 2). In his right hand the consultant either uses another grasping forceps, allowing him to tear muscle fibre apart; or he uses a type of instrument that is connected to the ‘diathermy machine’, allowing him to cut tissue

and seal off blood vessels using electricity. He alternately uses three instruments for this task: the so-called ‘diathermy hook’, the ‘Maryland’ and the ‘Ligasure’.



Figure 2: A ‘Johan’ grasping forceps

## 5. Formulating instrument requests

Table 1 lists all the surgeon’s requests for instruments from the scrub nurse during the first hour of the operation. It shows that the diathermy hook is alternately referred to as ‘hook’, ‘diathermy hook’, and ‘diathermy’, while grasping forceps are referred to with generic names (‘grasper’), anaphora (‘the other’), and proper names (‘Maryland’, ‘Johan’). Indeed the meaning of these names is ambiguous. While ‘diathermy hook’ is sufficiently specific to rule out any of the other instruments on the trolley ‘diathermy’ is not: there are at least three different instruments available that can be connected to the diathermy machine. ‘Maryland’ and ‘Johan’ too are names of a particular kind of grasping forceps and rule out any other grasper, but ‘grasper’ is a generic name that can refer to a range of different graspers, including the Maryland and the Johan.

Table 1. *Consultant-surgeon’s requests for laparoscopic instruments during the first hour of the operation*

Time (hh:mm)	Request	Provision
8.00	‘liver retractor’	liver retractor
8.12	‘grasper’	grasping forceps
8.46	‘hook’	diathermy hook
9.25	‘Johan’	grasping forceps
14.25	‘any grasper’	Maryland
17.19	‘Ligasure’	Ligasure
25.22	‘hook’	diathermy hook
30.25	‘Maryland’	Maryland
39.55	‘the grasper’	?
40.00	?	Ligasure
50.38	‘the other’	grasping forceps
52.32	‘hook’	diathermy hook
53.33	‘another Johan’	<i>not available</i>
54.45	‘bowel clamp’	?
55.58	‘bowel clamp’	bowel clamp
56.30	‘a Johan’	grasping forceps
57.31	‘diathermy’	diathermy hook
59.13	‘the other Johan’	grasping forceps
1.11.54	‘hook diathermy’	hook diathermy

In spite of the ambiguity the scrub nurse provides the expected instrument in most cases. For instance, 8 minutes into the operation, the consultant asked for ‘a grasper’. In response, the scrub nurse provided a grasping forceps. Only seven minutes later the consultant asks for ‘a grasper’ again, yet this time the scrub nurse provides a ‘Maryland’. Her knowledge of the context



of the requests allowed her to disambiguate them. The first request was made just after the liver retractor had been placed, and before any other instrument had been inserted. The second request was made just after a request for a ‘tonsil swab’, a small cloth used to absorb blood, and just before the consultant started dissecting. The Maryland allows the surgeon to move the tonsil swab around and also to dissect using diathermy. Indeed he requests for the Maryland to be connected to the diathermy machine immediately after he has used the tonsil swab. The scrub nurse anticipated that he needed to dissect using the Maryland very soon, so instead of providing a grasping forceps such as a Johan, which cannot be used for dissection, she provided a Maryland, even though it was suggested that any grasper would do (“Grasper please. Any grasper.”).

Other instances of disambiguation however were not successful, as in the episode we will focus on now. In the transcript below ‘CS’ stands for ‘consultant-surgeon’; ‘SN’ for ‘scrub nurse’; ‘CN’ for ‘circulating nurse’; XN for one of the nurses (unclear who); and SR for ‘specialist registrar’. ‘x’ means we were unable to hear what was said. Otherwise standard orthography is used.

Extract 1: ‘Do you have another Johan?’

1. CS Do you have another Johan?
2. SN *Holds up other instrument?*
3. CS No – an – *clears throat*
4. SN x
5. CS We asked you about half an hour ago.
6. SN I did. I did mention it.
7. CS So why did nobody get it? Maybe nobody answer.
8. CN We can open - the stack, we can use the stack for second case, for the next case.
9. CS And what are we going to do with the next case?
10. XN x.
11. CS No these are bowel clamps.
12. CN Two is not enough?
13. CS No is enough but the handles are different. So I can’t work in the same way. And if you, if I ask for anything. And you don’t have it. Can you just tell me. Because I assume that you get them. If I ask about them and you don’t answer.
16. SR Can you use the erm endo grasper?
17. CS No. I can’t.  
Okay. Gimme the bowel clamp.
19. SN *Passes bowel clamp.*
20. CS Thank you.
21. CS Can you clean the camera?
22. SR Hot water please. Fresh hot water.
23. SR You’ve got two yeah?
24. CS Yeah but two different handles.
25. SR Is it the right length?
26. SN *Offers jug with water, SR dips camera in water.*
27. CS Okay. Okay. Let’s show it me.
28. SR *Puts camera back in.*

29. CS Okay. bowel clamp now.
30. SN *Offers Johan?*
31. CS No is not bow- what is – Do you know what is a bowel clamp and what is a Johan? Show me the bowel clamps and show me the Johans.
33. SN *Holds instruments up.*
34. CS Yeah. This is bowel clamp. Okay?
35. [silence of 21sec]
36. CS Okay. Gimme a- give me a Johan. Johan please.
37. SN *Offers Johan.*
38. CS Thank you.

The episode starts and ends with the consultant-surgeon asking for a Johan. In between, a sequence of exchanges unfolds between the consultant, the scrub nurse and one of the circulating nurses, and also between the consultant and the specialist registrar. Some follow the typical pattern of a) the consultant requesting something, the scrub nurse or registrar providing what was requested, and the consultant acknowledging receipt. There are three such exchanges. First, when the consultant asks for a bowel clamp in Line 18, he gets a bowel clamp. Second, when he asks the registrar to clean the camera the registrar cleans the camera (after asking for and receiving hot water from the scrub nurse allowing him to rinse the camera). Third, when he asks for a Johan in Line 37 he gets a Johan. But other exchanges do not follow this pattern. When he asks for a Johan in Line 1 he doesn't get what he wants. When one of the nurses offer bowel clamps he rejects them in Line 11. When he asks for a bowel clamp in Line 29 he doesn't get it.

A different type of exchange is also used, consisting of a) a request for clarification or confirmation, and b) providing clarification. Three such exchanges are initiated by the circulating nurse and the registrar. First, in Line 12, the circulating nurse asks "two is not enough?", and the consultant replies, "No is enough but the handles are different. So I can't work in the same way." Second, in Line 16, the registrar asks, "Can you use erm the endo grasper?", to which the consultant replies, "No I can't". Third, in Line 23, the registrar asks, "you've got two yeah", and the consultant replies, "Yeah but two different handles." Fourth, in Line 25, the registrar asks, "Is it the right length?", to which the consultant does not reply. Two clarification sequences are initiated by the consultant. First, in Line 7, he asks, "So why did nobody go and get it?" to which no one replies. Second, he asks the scrub nurse if she knows the difference between a bowel clamp and a Johan, and asks her to show him one of each (and she appears to have passed the test).

So in a time span of one minute and ten seconds three requests for instruments/actions are successful, three others are unsuccessful, and four requests for clarification/confirmation are made by the circulating nurse and registrar, all of which are negated by the consultant. The unsuccessful exchanges cause increasing agitation on the side of the consultant, as evidenced, e.g. in Line 27 where he intervenes in the registrar's rinsing of the camera, requesting him to put the camera back in so he can proceed with the operation, saying "Okay Okay". But the unsuccessful exchanges and negated requests for clarification also suggest that the scrub nurse, the circulating nurse and the registrar are all having difficulty understanding what the consultant is up to. So exactly what is the consultant up to, and how much of that is understood by his colleagues?

At the start of the episode the surgeon is about to start tearing muscle apart. He needs two graspers for that. He prefers to use two 'Johans'. From the laparoscopic camera record we know that when he is asking for "another Johan" he is indeed already holding one Johan in his left hand; so the 'other Johan' must be for his right hand. The camera record also shows that at the end of the episode, after he's asked for a Johan again and acknowledged its receipt ("thank you", Line 38) he indeed holds two Johans in his hands. That means that there must have been at least two Johans from the start. So why does he not get another Johan when he first asks for one in Line 1? We do not know what instrument the scrub nurse offers in response to that first request for another Johan, but we do know that the consultant rejects what is offered and he subsequently appears to start repeating his original request ("No. An-[other Johan]"). The following turns all seem to suggest that the Johan he wants is not available: The scrub nurse starts accounting for it not being available ("I did. I did mention it"), relaying responsibility to the circulating nurses to whom she forwarded the consultant's announcement right at the start of the operation that he needs two Johans for this procedure.

So while there must have been at least two Johans ready to be used, the consultant surgeon and the scrub nurse are talking about how it could happen that they ended up with one Johan short despite the consultant's early announcement. That discrepancy causes confusion among the circulating nurse and the registrar. First the circulating nurse asks, "Two is not enough?" and second the registrar asks "You've got two yeah?". And in both cases the consultant explains what the problem really is: the handles of the two available Johans are different, and "So I can't work in the same way." There are many different types of handles. For the task at hand the handles without locking 'ratchets' seem most apt, as it requires constant opening and closing of the jaw to grasp different bits of the muscle. Handles are delivered separately, and nurses attach them to the various graspers prior to the operation. Thus the confusion about the availability of Johans is based on the ambiguity of the name 'Johan': as a name for a grasper, and a name for a grasper + handle.

It is not clear if the scrub nurse was unable to disambiguate the request for another Johan at the start, but her accounting for why it is not available does suggest that she understood that the consultant didn't just need two Johans, but two Johans with the same handles. When we asked her the following day, her recount of the event did indeed suggest that she is aware of this surgeon's preferences for that. However the circulating nurse, and also the registrar, are unable to disambiguate the request, and are left wondering why the consultant does not use the two Johans that are available. They also come up with alternatives. The circulating nurse suggests to open the stack for the next case, which happens to be the same procedure (Line 8), and pull out the Johan with the right handle in that pack. The consultant turns that suggestion down as it would create even more problems during the next case. The registrar suggests using an endo grasper – apparently missing the point of why the consultant needs two Johans with the same handles. Ultimately the solution to the problem comes from the circulating nurse, who goes to get another Johan with the right handle from the private wing of the hospital. It arrives about 15 minutes after the beginning of the episode. Meanwhile, the consultant's agitation has increased as he is struggling to perform the operation without his preferred instruments.

## **6. Codifying surgical preferences**

So how could this have happened? Why were there not two Johans with the right handle right at the disposal of the consultant at the start of the operation? The key to this question lies in the

way surgeon's preferences are 'codified' on their so-called 'cards' and how these codifications get translated when instruments are ordered through the hospital's booking system. The theatre nurses in this hospital (and indeed in many other hospitals) keep 'cards' for every consultant surgeon they work with, detailing, for every procedure which the consultant performs, which instruments he or she needs. The card for the procedure carried out in the episode includes a standard 'laparoscopic set', which contains a range of instruments commonly used in key hole operations. Additional items are listed separately, such as an item called "Frenchie frocep (YOHAN)" (sic; see Figure 3). On the back of the typed-out card is a handwritten list, which is probably an updated version. Here it says "frenchie", listed under the heading 'extras'. So on the surgeon's card the name 'Johan' becomes 'frenchie', 'frenchie forcep' (the 'r' in 'frocep' must have been a typo), and 'Yohan'. On neither side is it mentioned that two Johans are required, nor are the handles specified. A senior scrub nurse at our research site explained to us that indeed 'frenchie' and 'Johan' refer to the same forceps.

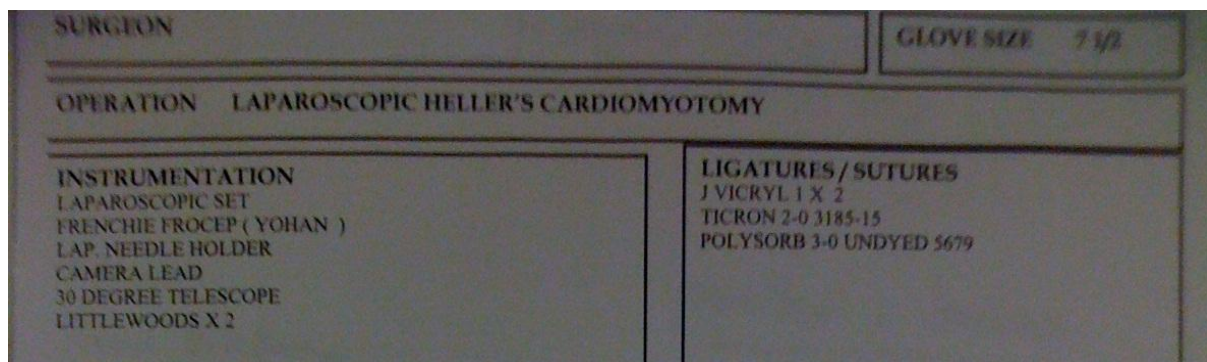


Figure 3: Excerpt of the consultant-surgeon's preference card

Surgeons' cards are indicative of the variety in the way operations are performed. As surgeons work with different trainers in different hospitals, often in different social and cultural contexts, they develop their own professional preferences, from the draping of the patient to the closing of the skin. Out of the infinite variety of surgical instruments they will choose to work with specific instruments, and they will choose to refer to those instruments using one of a range of possible names ('Johan'). Whilst operating, surgeons expect that nurses are familiar with these preferences and that they will facilitate their work in line with those preferences. Hence nurses are to make sure that the surgeons' preferred instruments will be at their disposal. They also need to know how surgeons actually name their preferred instruments, so that they can pass on the right instrument upon the surgeons' request.

Nurses are well aware of the variation in surgical practices among the many surgeons they work with. The cards they keep is one way in which 'local knowledge' of surgical practices in a hospital is maintained and passed on to newcomers. Even when these newcomers are highly experienced nurses, they will need to learn about those specifics: that Mr Peterson wants an extra Johann grasping forceps when he does a cardiomyotomy, for instance; and that Mr James calls a certain retractor blade a 'middle blade'. They also need to learn the specifics of the preferred instruments: how to assemble them or dismantle this particular make of this type of instrument, for instance.

The episode shows that this history of collaboration affects not only the moment-by-moment communication between scrub nurse and consultant-surgeon, but all communication in

the operating theatre. The scrub nurse in the episode had not worked with the consultant for long; the consultant asked her for her name at the start of the operation. The circulating nurse has a longer history of collaboration with the consultant-surgeon, but the procedure (a cardiomyotomy) is a relatively uncommon one; this consultant probably does no more than 5 such procedures a year. Thus there is very little opportunity for this team of nurses and surgeons to develop a shared language for instruments. This is a major constraint for these teams, and one that breaks with the widespread expectation of surgeons epitomized in the slogan well-known in the surgical community, “Give me what I want, not what I asked for”. By that they mean that scrub nurses should know exactly what surgeons need, so much so that they should know when to ignore surgeons’ incidental requests for the wrong instrument. The episode shows that while it is increasingly difficult for nurses and others to disambiguate surgeons’ requests as a result of limited opportunities to work together on the entire range of procedures, the expectation that nurses are aware of all the surgeons’ ‘idiolects’ has remained unchanged.

## **7. Dealing with instability and uncertainty**

So what can nurses and surgeons do to prevent the type of situation exemplified by the episode, whereby surgeons do not have at their disposal the instruments they prefer to work with and nurses and registrars do not understand exactly what the surgeon is requesting? What can be done to improve the communication between nurses and surgeons?

Just before the start of operations staff are now required to jointly go through the ‘Surgical Safety Checklist’. The checklist was designed by the World Health Organization and was introduced in England in 2009. One of the questions on the checklist is, “Are there any specific equipment requirements or special investigations?” And indeed, we have observed consultants asking in that context about the availability of instruments (“You’ve got the pelvic set?”). Better still, when ‘special’ instruments are required, consultant-surgeons sometimes check if they are available some time (say, one hour) before the operation starts, or they ask their registrar to check this for them. On several occasions we have observed them popping their head around the operating theatre when nurses are preparing for the operation on the patient who is being anaesthetized in the anaesthetic room next door and asking if certain instruments are available. Nurses cannot always confirm that the instruments are available, but they then have at least some time before the operation starts to get the instruments from somewhere. Nurses may also ask surgeons about the stuff they need in advance of the operation. One nurse asked a registrar questions about how he wants things done (“Peter, are you going to use...?” “Peter, how do you want it...?” “Now Peter you have your way of... how do you...”). Another nurse went into the prep room with a consultant asking questions about some of the instruments, which indeed are ‘cutting-edge’ and not yet widely used.

The Surgical Safety Checklist is an institutional response to instability and diversity based on a notion of standardization and homogeneity, like so many of society’s responses to multilingualism (cf. Bezemer and Kroon 2008). A similar response is often heard from clinicians when the names of instruments are discussed. As early as 1899, Mr Truax, a US based surgeon, writes,

One object sought in this work is to assist in securing a standard nomenclature for surgical instruments. The custom of calling the same instrument by various names is annoying and confusing. For instance, a periosteal elevator is often referred to or described as a levator, raspatory, elevator, dry dissector or periosteotome; a plain spring dressing forceps, may be

called a thumb forceps, a dissecting forceps, a plain artery forceps, a tissue forceps etc., and even standard text-books sometimes refer to forceps for hemostatic purposes as ‘nippers’. (Truax 1899: 8)

More than a 100 years later the clinicians we talked to are still inclined to argue for more standardization to prevent confusion about the names of instruments. Such a language policy seems neither feasible nor desirable. Choosing a standard has, of course, power implications, but it also creates the suggestion that a name for an instrument is meaningful outside its context of use. That was also the underlying assumption of the study we quoted earlier suggesting that theatre staff are ‘better’ and more consistent in naming instruments than surgeons. Our observations show that, rather, the meaning of instrument names is entirely dependent on shared understandings of the situation and of each other. Instead of aiming for more ‘standardization’, which would breach Grice’s conversational maxim of ‘quantity’ (imagine the consultant in our example asking for a “laparoscopic Johan grasping forceps, 330mm long and 3mm diameter”), we would argue for ensuring that surgeons and nurses share a definition of the situation. It should be the responsibility of both the scrub nurse and the consultant to ensure both parties know ‘what is going on’, so that the scrub nurse can accurately disambiguate requests. Acknowledgement of diversity and negotiation of meaning –including seeking and providing clarification- is key to communication in the operating theatre, while standardization is not workable nor desirable.

## 8. Conclusion

Our analysis shows how changes affecting the communicational landscape throughout society are dealt with at a clinical workplace. Social and economic changes are clearly visible in the operating theatre: continuity in teamwork is increasingly being replaced by ephemerality; social and cultural homogeneity by diversity, division of professions by cross-disciplinary collaboration; and –less so in the operating theatre- hierarchical power structures by open, participatory power structures. All of these shifts imply a move away from stability and predictability to instability and provisionality (Kress 2010). The cases we discussed are indicative of attempts to come to grips with these changes. Standardization and codification are responses to diversity which have been well-documented in applied linguistics. Old expectations which characterized an era of stability and continuity are now challenged—that colleagues know each other through and through; that they have learned to say and do things in exactly the same way; that the dominating power sets the standard. Now, in an era of instability and diversity, meaning needs to be negotiated in situ, and a shift towards more open, participatory power structures may facilitate that. We hope that our paper offers a sociolinguistically informed analysis of some of these issues which is not only of interest to applied linguists but which is also useful to the clinicians themselves.

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## Notes

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