Professional artist, good Samaritan, servant and co-ordinator: four ways of understanding the anaesthetist's work*

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Summary: **Background:** Evaluating clinical competence among anaesthetists has so far focused mostly on theoretical knowledge and practical skills. According to theory, however, the way anaesthetists understand their own work has also greatly influenced the development of professional competence. The aim of this study was to investigate how anaesthetists understand their work.
Methods: Nineteen Swedish anaesthetists were interviewed. The interviews were open and sought answers to three questions 1) When do you feel you have been successful in your work?; 2) What is difficult or what hinders you in your work?; and 3) What is the core of your professional anaesthesia work? Phenomenographic analysis was performed.
Results: Four ways of understanding the anesthesiologists' professional work were found: 1) Give anaesthesia and control the patient's vital functions; 2) Help the patient, alleviate his/her pain and anxiety; 3) Give service to the whole hospital to facilitate the work of other doctors and nurses, caring for severely ill patients; and 4) Organize and direct the operation ward to make the operations list run smoothly.
Conclusions: This study shows that anaesthetists understand their work in qualitatively different ways, which can be assumed to affect their work actions and also the way their competence develops. This has implications for the education of anaesthetists; it is important to find ways of making anaesthetists in training consciously aware of the different ways their work can be understood, as this will give them better prerequisites for future competence development.

Keywords: Anaesthesiology – Anaesthetist's work – Education – Interviews – Phenomenography – Professional competence.

Why do some anaesthetists perform a better job than others? The question is important; proficient anaesthetists contribute to good quality of care in our operation wards and create good working conditions for surgeons. The anaesthetist's work is often characterized by uncertainty and lack of information and the first necessary step in handling a situation may be to describe the problem to be solved. Theoretical knowledge and rational reasoning may then not suffice [1]. The anaesthetist must instead be able to use tacit knowledge that he/she may not even be aware that he/she possesses.

Heightened expectations by politicians, employers and the public have created an increased demand for improving methods of training and assessment of knowledge and skills [2]. But professional competence, often easy to recognize, is difficult to measure. Assessment of clinical competence has so far focused mostly on theoretical knowledge and practical skills [3,4] and, in the last few years, also non-technical skills [5]. The possession of these attributes does not, however, guarantee that work is performed well [6].

Recognizing the shortcoming of the traditional view on competence, some pedagogic researchers have entered a new research approach. Sandberg [6] in a study on engine optimisers, mapped engineers' different conceptions of their job, how they understood and experienced their work. He showed that workers with a broader understanding of their work were judged to perform better. Klemola and Norros [7,8] showed that anaesthetists' ways of making decisions in a clinical setting (managing anaesthesia in the operations room) could be categorized in two qualitatively different groups. One group, representing more effective decision making, was characterized by 'recognition of uncertainty' in clinical situations. In the other group uncertainty was not recognized and action was based on a deterministic implementation of a preoperative plan. The two groups also differed more generally in their conceptions of the work. Ramritu and Barnard [9] in a study on new nurse graduates' understanding of competence found support for a more holistic definition of competence.

It would be beneficial to move the focus from acquisition of knowledge and skills to the anaesthetist's understanding of his/her work, when working with competence development.

The aim of this study was to investigate how anaesthetists understand their work.

* Nachdruck aus Acta Anaesthesiol Scand 2003;47:787-793 mit freundlicher Genehmigung von Wiley-Blackwell Publishing Ltd., Oxford, UK (Contract Number: 85923).

Method

Theoretical framework

The research object of this study is 'way of understanding', how anaesthetists think and create meaning about their work. This is a research question that lends itself to a qualitative method. Qualitative methods are well suited for research that aims at increased understanding of how people think and understand the world around them and have been increasingly used in healthcare research [10]. In qualitative research the emphasis is on exploring and explaining a phenomenon rather than on testing of a hypothesis [11].

The method used in this study is phenomenography. This qualitative research approach was first used in the 1970s by a Swedish pedagogic research group [12] and has in the last decade also been used in health research [13-15]. Phenomenography proposes that a phenomenon is understood by people in qualitatively different ways: different aspects of the phenomenon are brought into the focus of awareness and different meanings of the phenomenon created. In a group of people there is always a limited number of ways of understanding a phenomenon [16].

The most common method for collecting data in phenomenography is in-depth interviews. Transcripts of the interviews are analysed, the researcher looking for different ways of understanding the phenomenon among the interviewees.

Setting and participants

Our aim was to reflect the diversity of the ways anaesthetists understand their work. In selecting informants for the study it was therefore considered essential to obtain variation both in length of clinical experience and in working context. The choice of sample size was based on the experience from numerous previous phenomenographic studies, showing that around 20 informants are sufficient to find all ways of understanding a phenomenon in a group of people [15]. Three hospitals in mid Sweden were chosen for the study. Hospital A and B are middle-sized county hospitals, C is a smaller hospital. All qualified anaesthetists in active clinical work during the weeks of interviews, altogether 19 people, were asked to participate and all accepted. The interviewees were between 35 and 60 (median 46) years of age and had from 5 to 27 (median 10) years of experience as qualified anaesthetists. Of the interviewed doctors, three (16%) were female. Among Swedish anaesthetists 25% are female.

Data collection

The interviews were done at the anaesthetists' workplace by one of the authors (JL), consultant anaesthetist with training in qualitative research. The interviews took place from spring to summer 2000 (hospital A), autumn 2001 (hospital B) and spring 2002 (hospital C).

The interviews were open and sought answers to three questions (1): When do you feel you have been successful in your work; (2) What is difficult or what hinders you in your work; and (3) What is the core of your professional anaesthesia work? Similar questions have been used by Holmström [13] in studies on diabetes care and by Dall'Alba in a study on medical students [14].

In open interviews like these there is a risk that the answers from the interviewees are influenced by the researcher's way of conducting the interviews, jeopardising the reliability of the results. The aim of the interviews was to capture the interviewees fundamental and genuine thoughts about the meaning of their work. The interviewer therefore returned to the main three questions several times during the interview and, using probing questions (Table 1) and reflecting comments, encouraged the participating anaesthetists to focus on their own lived experience, describing situations from their clinical work.

The interviews lasted for 1-1½ h. They were taperecorded and transcribed word-for-word, either by the interviewer, or by a secretary and verified by the interviewer listening to the tapes.

Table 1: Questions used in interviews with anaesthetists.

Main questions	Probing questions
I. When do you feel you have been successful in your work?	a) Tell me about a day when you felt satisfied with your job! b) Describe a patient case, where you think you did a good job!
II. What is difficult or what hinders you in your work?	a) Can you remember any occasion when you felt your work was very difficult? b) As an anaesthetist you may sometimes make amistake that will have serious consequences for the patient. Do you often think about that?
III. What is the core of your anaesthesia work?	a) What are you responsible for during a normal working day at the operations ward?

Method of interview analysis

In phenomenographic analysis the aim is to find different ways of understanding one phenomenon (here the anaesthetist's professional work). In open interviews the dialogue often contains other things than that which is the researcher's object of interest. The first step of the analysis therefore was to find those passages in the interview where the interviewee gave answers to the three main questions. In these passages it was investigated what is in the focus of the anaesthetist's attention and how he/she describes his/her way of working. This is illustrated by the following excerpt from one of the interviews:

> It can be patients who show worry and anxiety about everything that is going to happen to them and, be it children or adults, it makes no great difference, but by means of your preoperative talk with the patient or by the way you treat the patient when you give him/her anaesthesia, you get a feeling - I have been able to help this patient through this. That they did not experience the worry and fear they thought they would have to suffer...It is a planning that you make in advance, to see to it that you have alternatives if there are problems, e.g. a difficult intubation.... (interview hospital A, anaesthetist 2, lines 59-66).

In focus in this interview is the patient as an individual subject, a person with feelings of worry and fear (the 'what' of the understanding). The anaesthetist helps the patient, by guiding him/her through the operation, and is prepared to handle situations that can be dangerous for the patient (the 'how' of the understanding).

For each interview, we made a preliminary description of the anaesthetist's way of understanding the work. Next, the descriptions were grouped into categories, based on similarities and differences. No predetermined categories were used. For each category a common description was formulated and a suitable metaphor assigned to convey a more intuitive understanding of the content of the category.

Finally we read each interview once more, looking for passages where the interviewees expressed ways of understanding their work besides the dominating one, ways of understanding with the same object in focus (the 'what' of the understanding) as any of the other ways of understanding. The following example is from the same interview as above:

> ...practical work with my hands. It is about physiological processes that one often observes, I mean, we often affect it all with our drugs and ...well, solving some problems that may arise, some quick decisions... (interview hospital A, anaesthetist 2, 169-172).

This anaesthetist, having the patient as an individual subject in need of his help and guidance as his main way of understanding, shows in this passage that he also focuses on the patient as a physiological object, taking care of his/her vital functions.

The software QRS NUD*IST [17] was used to handle and analyse the data material.

The study was approved by the Ethics Committee at the Faculty of Medicine, Uppsala University, Dnr 01-226.

Results

Four ways of understanding the anaesthetist's professional work were identified. Each understanding is illustrated by translated excerpts from the interviews.

A. Give anaesthesia and control the patient's vital functions - 'the Professional Artist'

The anaesthetist is responsible for the patient's vital functions during the operation, applying his/her knowledge about clinical physiology and pharmacology. He/she should make plans for the anaesthesia to become aware of problems, if possible prevent them. The anaesthetist must be able to solve acute problems and make quick decisions. Manual dexterity and finger tip feeling are important attributes.

> The core? Well, to me it is...when I feel that my ability is used, it is for instance when I take care of a patient with an unstable hemodynamic situation; or when I anaesthetise a severely ill patient, getting that patient to survive...and there are some challenges, getting the electrolytes and fluid balance in good order...anaesthetising in a nice way, managing to keep vital functions so to say intact; then you feel satisfied. (hospital A, anaesthetist 3, 50-52).
>
> Well, it is, I think, it is very much about basic medicine, physiology and applied physiology, and how you can...how you can control, take over and support these basic events. (hospital A, anaesthetist 9, 197-198).

> What is special about anaesthesia is that you are a pharmacologist and a physiologist and you use this knowledge to make people unconscious for a limited period of time by means of a polypharmacy, completely dangerous to life...With the knowledge that you have about the body, how it functions in general, to be able to take people through life threatening situations...anaesthesia is a sort of craftsmanship. (hospital C, anaesthetist 1, 59-64, 266).

For interviewees with this conception, focus is on the medical process of anaesthesia, the patient as a physiological object. The core of the work is to control the patient's vital functions by applying knowledge of clinical physiology and pharmacology. The place is here; the time is now. Job satisfaction comes from solving difficult problems, getting out of tricky situations where vital functions are in danger.

B. Help the patient, alleviate her pain and anxiety – 'the Good Samaritan'

The anaesthetist's main task is to see to it that the patient is safe and comfortable before, during and after the anaesthesia. He/she must know where the dangers are and guide the patient past them. The patient is often apprehensive of the operation and the anaesthesia. During the preoperative visit the anaesthetist must take his/her time to listen to the patient's questions. He/she should explain the different parts of the anaesthesia and the potential risks, using a language that is easy to understand.

> Yes, I should guide them through something that they, in the first place, are damned scared of...and which, in the second place, is often very painful and difficult, actually, and they should rather not notice anything about it. (hospital A, anaesthetist 5, 108-116).
>
> ... just at the moment of [the patient] falling asleep. Then you try to develop further what you built up the day before and to bring about a feeling of calm. At that moment you often understand how the patient wants things to be. And then, often, I can do that job quite well, I think. I think it is important to try...especially this psychological way of taking care of the patient just at the moment of being put to sleep, because for most people this is not an easy thing. (hospital A, anaesthetist 10, 255-259).
>
> For instance when you are going to do awake fiberoptic intubation, I can feel very content if it is possible to see the patient before the operation to tell him about the procedure, and then meet him on the day of operation. Then you don't have to say much more...you do as you have planned and everything goes well and you get a chance to speak to the patient afterwards...you managed not only technically but the patient felt comfortable and you could take his worry away...You have some sort of responsibility for the patient's well-being during the time when he is unconscious ...it is my duty to know what the dangers are... (hospital B, anaesthetist 3, 102-110, 267-269).

Anaesthetists with this way of understanding focused on the patient as an individual subject with a life story, threatened by disease, having to experience fear, pain and sometimes suffering. The anaesthetist's task is to guide the patient through the operation and protect him/her from dangers lurking on the-way.The place is here (where I meet the patient), the time starts with the preoperative talk and ends when the patient leaves the postoperative ward, safe and free of pain. The doctor's reward is to see a scared patient being calmed or a patient in pain being relieved.

C. Give service to the whole hospital to facilitate the work for other doctors and nurses, caring for severely ill patients, 'The Servant'

The anaesthetist should give service to doctors, nurses and patients in the whole hospital, so that the severely ill patients can be cared for safely and smoothly. He/she should be like a cog in a wheel, the spider in the web, the last outpost when others fail and the patient's vital functions are in danger.

> We are actually the cog in a greater system, and it is absolutely necessary that things function smoothly, that we take the responsibility for safety and for the patients...We must synchronize the processes so that things proceed as smoothly as possible for the surgeons and for relatives, for everybody...We are experts when it comes to some procedures that have to be done in the general wards...if they get stuck, of course we must be willing to help them - for the sake of the patient. I think one should have an attitude of service. (hospital C, anaesthetist 2, 87-104).
>
> We are sort of 'the spider in the web', that is - we coordinate and help where others have failed in some way...we facilitate surgical operations, help Anesthetists' ways of understanding work with seriously ill patients...We are a sort of helpers, I think. (hospital B, anaesthetist 1, 152-155).
>
> The core is that it is a discipline of service for the best of the hospital when it comes to acute diseases in all ages when vital functions are threatened. (hospital B, anaesthetist 5, 168-171).

For the interviewees with this conception the clinic of anaesthesia is a service organisation for the whole hospital with its clinics and specialist doctors, working with severely ill patients. The anaesthetist is a helper for the helpers, making the job run more smoothly for all those who work to care for and cure the sick. The place is the hospital, time starts when the patient gets into the hospital and ends, hopefully, with the cured patient leaving the hospital.

D. Organize and direct the operations ward to make the operations list run smoothly - 'the Co-ordinator'

The anaesthetist's main task is to lead the operations ward, seeing to it that the operations list is carried through at a good pace and with good quality. He/she must be able to plan in advance, should always be one step ahead and must be good at improvising to be able to correct disruptions quickly. Good communication with other team members is important.

> Many a time we have been able to plan as early as the evening before how to organize the day also in the emergency operation theatre. And if things run well and everything goes on as we have planned, then we feel quite happy, and we get more things done; we get started early with the first acute patient, and then we can take them one after the other without rush and tear, everything runs smoothly. (hospital A, anaesthetist 4, 25-28).
>
> You are the one who runs the business and then I mean from the point of view of production, as a matter of fact I have to take responsibility for things to get started. I must push. (hospital B, anaesthetist 6, 297-301).
>
> The main task is to get through with an operations list...as well as possible, fast if possible...keep control of everything and make things work. Much is about organizing and anticipating...when I work with one patient I am already thinking about the next to come, to be able to be prepared in good time...it is so much about communication; it is a teamwork. (hospital A, anaesthetist 6, 105-107, 223-225, 338-340).

In this way of understanding anaesthesia work, focus is on organisation, leadership and communication. Interviewees with this understanding regarded their main task as leading the operations ward efficiently and leading the team in the operation theatre. The place is the operations ward; the time is from the start to the end of the operations list.

The distribution of ways of understanding among the interviewees is shown in Table 2.

Discussion

The aim of the present study was to describe what anaesthetists understand as the core of anaesthesia work. The different ways of understanding anaesthesia, the result of the anaesthetists' thinking about their work, were grouped into four categories of description. Focus was not on differences between individual anaesthetists (e.g. gender, personality), which may have given rise to these ways of understanding the work. Instead we were interested in the qualitatively different ways that anaesthesia work

Table 2: Four ways of understanding the work.

Interviewees	'Professional artist' In focus: The medical process of anaesthesia	'Samaritan' In focus: The patient as an individual subject	'Servant' In focus: The hospital at the patient's service	'Co-ordinator' In focus: The operations ward, producing operations
male (<5)	++			+
male (5-10)	++		+	+
male (10-15)	++			+
male (10-15)	++		+	
male (15-20)	++			
female (>20)	++			
male (<5)	+	++		
male (<5)	+	++	+	
male (<5)	+	++		
male (5-10)	+	++	+	
male (10-15)	+	++		
male (>20)	+	++		+
male (<5)	+	+	++	
male (<5)	+	+	++	
male (>20)	+	+	++	+
male (5-10)	+		+	++
female (10-15)	+	+		++
male (10-15)	+	+		++
female (>20)				++

Nineteen qualified anaesthetists' dominating (++) and non-dominating (+) ways of understanding the anaesthesia work. Numbers in brackets: years of practice after qualification as specialists in anaesthesia and intensive care.

could be understood. The individual anaesthetist may have (and almost everyone actually has) more than one way of understanding; the individual doctor's understanding may vary over time, depending on contextual changes.

The first three ways of understanding, A, B and C, have the patient in focus but from three different perspectives. The six anaesthetists with understanding A had the medical process of anaesthesia in focus; none had the patient as person in focus (the 'what' of understanding B).

All six interviewees with understanding B (the patient as an individual subject) on the contrary, also had in focus the medical process of anaesthesia (the 'what' of understanding A). An anaesthetist with understanding B will also focus on the medical process of anaesthesia (but not necessarily in the same way as those with understanding A); to be able to escort the patient safely through anaesthesia the anaesthetist must keep his/her skill in keeping control of vital functions.

In C, the anaesthetist also had the patient in focus, but it is the whole hospital that has to function well in order that the patient is well taken care of. To that end the anaesthetist supports other doctors and nurses and guides the anxious patient through the perioperative period and safely takes care of his/her vital functions.

In understanding D, focus is on the organisation, the operations ward and the team in the operation theatre.

The four ways of understanding anaesthesia constitute a hierarchy, with C as the most comprehensive one (Fig. 1). Anaesthetists with the more comprehensive ways of understanding also expressed less comprehensive ones, while the reverse often did not occur. This is most obvious between understanding A and B. As the way we act is governed by our way of understanding, an anaesthetist with understanding B will, when necessary, be able to move to understanding A, shifting focus of his/her performance. But an anaesthetist with understanding A will have difficulties in shifting focus to understanding B, even if the situation demands it.

Transitions from A to B to C would mean adopting a broader way of understanding the work. There is nothing in the present study to support that such a transition takes place during years of professional work. Understanding A was held also by anaesthetists with long experience and understanding C by two interviewees with relatively short experience of anaesthesia. This lack of documented change of understanding may be because learning preferentially occurs as a continuous refinement of the present understanding. A more fundamental form of competence development presupposes a shift of understanding [18], which normally takes place only when a learner is confronted with a situation that cannot be handled within the present understanding and afterwards reflects on that experience [19]. Research in work pedagogy has shown that professional workers with a broader way of understanding the work can do a better job [6]. If this is true for anaesthetists, which is probable, the challenge in competence development would be to promote change to a broader way of understanding the work. Such a change is possible; in two studies about diabetes care changes of medical professionals' understanding of work took place after educational interventions, altering their understanding of the work in question [13,20].

All categories of description of a phenomenon put together in an organized manner, in phenomenographic terminology 'the outcome space', is the Anesthetists' ways of understanding work phenomenon [16]. So, the work map, created out of anaesthetists' conceptions of their work, is anaesthesia from the perspective of qualified anaesthetists. This has important implications for the education of trainee anaesthetists. To learn one must know something about what one is about to learn. Teachers of anaesthesia can give young colleagues better prerequisites for becoming competent professionals by making them aware of the different ways anaesthesia work can be understood. It would also be of value to know which ways of understanding their work young trainee anaesthetists have at the outset of their professional career; in other words: what does the work map of beginners in anaesthesia look like? This will be the object of a future study.

Fig. 1: The anaesthesiologists' work map, representing the collective understanding of the work in a group of Swedish anaesthetists.

'Servant' **In focus: The hospital system with doctors and nurses, caring for and curing the patients.**	
'Co-ordinator' In focus: The operations ward, producing operations.	'Samaritan' In focus: The patient as an individual subject, with his/her pain and anxiety 'Professional artist' In focus: The patient´s vital functions and the medical process of anaesthesia

Acknowledgements

The authors thank the participating anaesthetists, who so willingly took their time during busy wor-

king days to share their experiences with us. Thanks also to Eva Lindberg for valuable comments.

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