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The Interactive Construction of Learning in Situated Practices



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Introduction and aims

The present thesis investigates the interactive construction of learning in situated practices.¹ Learning is understood as situated and locally negotiated, as constituted in the moment-to-moment interaction between people. This way of understanding learning shifts the focus from learning as a cognitive process, as lodged within individual people's heads, to instead explore learning *in/as* interaction. My work is part of a growing literature that addresses issues of learning and socialisation, and it aims at taking part in the development of a theory of learning that is empirically grounded, that is, based on the detailed analysis of situated activities.

In my understanding of learning *in/as* interaction, I am firmly grounded in an interaction perspective, which is conversation analysis (CA). Goodwin (2000a&b) writes that the primordial site for the analysis of human language, cognition, and action consists of a situation in which multiple participants are attempting to carry out courses of action together, while attending to each other and the material environment. To me, this is the case for issues of learning too.

Within conversation analysis there is however no developed theoretical understanding of learning. Important to the development of my approach to learning has thus been another research tradition. This is a perspective on learning that is sometimes referred to as socio-cultural (Lave & Wenger, 1991; Lave, 1993). Within the socio-cultural perspective learning is understood as a fundamental part of all human practices. Learning is not restricted to educational settings of different kinds, but instead tied to a theory of social reproduction and socio-cultural continuity and change. Learning is defined as changing participation in social and situated activities and in communities of practice. In other words the active construction of knowledge is emphasised, and a view of knowledge as solid and static rejected. Consequently, the notion of learning as transmission of clearly defined "chunks" of knowledge is demonstrated to be untenable, and in Lave's (1993:5-6) words

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“there is no such thing as ‘learning’ sui generis, but only changing participation in the culturally designed settings of everyday life”.

In my own work this way of understanding learning is of crucial importance. However, I am not really interested in combining different research perspectives, but rather in investigating the possibilities of developing an understanding of learning from within an interaction perspective, that is conversation analysis. In this 50 per cent manuscript I have judged it necessary to discuss both conversation analytic research, socio-cultural understandings of learning, and to some extent research on cognition as socially distributed. My understanding is that cognition is a more established area of research within CA, whereas issues of learning to a large extent have been approached in a way that could be described as the study of conditions for learning. The main argument that has been developed is how the interactional architecture or organisation is of importance to what happens in, for example, educational settings. How the sequential organisation of interaction both constrains and affords different educational goals and how interactional phenomena can be understood as resources for learning. In this manuscript I spend quite some time discussing the different perspectives and how they are related to each other. In the final version of the thesis this might (will!) look different.

From the very beginning of my project, I have been interested in learning in a here-and-now, in learning as it occurs. I wanted to capture learning as it happens, and I was concerned with the way that learning is often mystified. It is construed as something beyond reach, as something that we in a sense cannot study empirically, and consequently that we have to be satisfied with studying learning in terms of inputs and outcomes. It seems that a common assumption is that learning first happens “somewhere else” (that is, not *in* interaction, or at least not *only* there), and second that it takes some amount of time, however unspecified how long.

In my thesis I will address the question of the content of learning, or the issue of *what* is learned. In the by now classic introductory chapter to *Understanding Practice*, Jean Lave (1993:8) writes that the fact that learning occurs is never problematic, whereas *what* is learned is always “complexly problematic”. When it comes to interaction analyses of educational settings or practices it is predominantly the *how* that is studied, whereas the content of learning is at best commented upon but not problematised or simply not an issue at all. I believe that it is important for conversation analytic perspectives to address the question not only of *how* we learn but also *what* we learn. This should be done by

integrating the how and the what rather than by separating and dichotomising them. It is my conviction that CA has something to contribute to learning research in this respect, as the detailed analyses can demonstrate how a content of learning is constituted in interaction between people. The issue of the content of learning is what is today the most developed part of the analyses, something that is also visible in the way that the theoretical framework is presented.

In the thesis I will also try to expand on the notion of the situatedness of a situation. As already stated, learning is situated and locally negotiated, an assumption that is grounded in both a conversation analytic and a socio-cultural perspective. Whether we talk about learning as a process or changing participation, issues of temporality and chronological order are crucial. However, it is quite clear that even if the (interactional) world can in many respects be described as in constant flux, we do not meet the world as completely new to us in every moment. The changes are small and gradual. There are elements that link our actions to each other. In the conversation analytic understanding of the sequential organisation there are ties between what comes before and what comes after, in the sense that each turn simultaneously builds on previous actions and projects possible next actions. That something is experienced as new and changed is closely tied to something else that is constant, and recognised as the same. Change and continuity go together hand-in-hand. However, the sequential understanding of what ties the world together is still on a very local level, focusing the turn-by-turn sequential development of a situation. To me it has been helpful to work with Goodwin's understanding of how talk, embodied action and material environment can be integrated into the analysis of activities. For example, through studying shifts in the participants' orientation to different contextual configurations (Goodwin, 2000a) and how gestures are tied to the material environment (Goodwin, 2007), it is possible to see how some aspects are maintained whereas others are changed. Another way of formulating this is that the participants construe some aspects of a situation as the same, whereas others change. Goodwin has developed a way of understanding this gradual change within situations. In my thesis, I will expand this to the study of the relations between different situations too. The import of this for learning research is further that it is related to the question of transfer, or, put very simply, how we come to be able to use something we have learned in one situation in another. I will confine myself to just raising the issue here-and-now, but it is something that will be developed in my future work.

Sites of investigation

This study sets out to explore learning in/as interaction. It is driven by an interest in human interaction and how talk, embodied action, and material environment are integrated with each other – to the participants carrying out actions in concert with each other and to the analyst – and by an interest in learning as an intrinsic aspect of this interaction.

As a consequence of these rather general interests, and with the aim of writing a thesis in which ways of analysing learning within conversation analysis are an object of discussion, I have chosen to work with empirical material from two quite different settings. I use empirical data from on the one hand the early years in the elementary school, and on the other hand an aviation academy. In the thesis we will thus encounter children reading a book in a classroom, other children playing the game of jump rope on the schoolyard, and a young adult practicing a flight manoeuvre as part of learning how to fly.

In the detailed analysis of the different practices questions related to the specificities of each situation will be raised. Through the careful exploration and analysis of these situations we can learn a lot both about how specific practices are constituted in interaction and about more general issues of learning in relation to what it is to be part of these practices.

Aims

The overall aim of the thesis is to develop an empirically grounded theoretical understanding of learning within conversation analysis.

More specifically I aim to study:

- content aspects of interaction
- relations between situations; expanding on the notion of the situatedness of situations

(Thought) plan of the book

The first chapter consists of a presentation and discussion of the theoretical framework within which the study is placed. In this chapter the theoretical points of departure are outlined. Following is a chapter discussing methodological issues.

There will be (at least) three analytic chapters. The first will be about the content of learning and how this can be studied. The second analytic chapter will occupy itself with the expansion of the situatedness of a situation, addressing the – for learning theory central – question of transfer. In the third part of the analysis, I envisage developing a study of learning that works with an integrated perspective on interaction, taking into account the issues of content and transfer that I have raised in the prior chapters.

Today these analytic chapters look considerably different from what they will look in the final version of the thesis. The analyses of the different empirical materials that are today separate and analysed as separate entities, will be brought together, they will be contrasted to each other with the aim of informing each other. The result that I wish for is to simultaneously be able to demonstrate the specificities of each analysed situation and setting, and to be able to discuss more general issues.

The end of the book is still at large unknown land, but there will be a concluding discussion of the core issues that the thesis has dealt with.

Learning in/as interaction

An increasing interest in issues related to learning can be noted with a steadily growing amount of studies that are dealing with issues of learning *and* interaction. What is investigated is however more often how different educational tasks and practices are interactionally constituted rather than issues of learning and cognition *per se*. As of today only a few studies have directly addressed the question of learning *in/as* interaction, arguing that someone is learning something and claiming to be able to demonstrate this learning.

The formulation 'learning in/as interaction' is not haphazard, but intended as a point of discussion. My ruling out of the alternative learning *and* interaction has to do with the thereby implied dichotomisation, or separation, of learning and interaction. To me, this way of understanding the relation between learning and interaction maintains, or at least allows for, an understanding of learning and cognition as phenomena lodged inside individual people's heads, a view that is incompatible with the notion of learning as changing participation. Within such a perspective formulations such as interaction (or interactional phenomena) as a *resource* for learning is plausible.

The difference between learning *in* and learning *as* interaction is more difficult to pin down. The use of *in* might suggest a dichotomisation too, where the difference is the emphasis of learning as occurring *in* interaction, thus tying them closer together. Learning *as* interaction seems to escape that objection, but does it also imply an equal sign between learning and interaction? The principal problem I would have with that is that even if learning indeed can occur at all times and places, it is hardly fruitful to say that where there is interaction there is learning. Is it possible to imagine interaction without there being learning? – a question to which I would answer: yes.



Referring to socio-cultural perspectives on learning, as represented by for example Lave (1993) and Lave and Wenger (1991), is quite common in conversation analytic studies with an interest in learning in a broad sense. As was stated in the introductory chapter, this

is the case for my thesis too, in the sense that the socio-cultural way of defining learning as changing participation is central to my understanding of learning. However, as will be discussed in the following, I believe that there are important differences in the perspectives, not least when it comes to the very core concept of participation, the concept that can be described as forming the conceptual bridge between the perspectives. This is something that will be discussed at some length.

Another important part of the notion of learning as changing participation is the issue of change. What kind of change constitutes learning? In the socio-cultural perspective, the change is from novice to expert, from legitimate peripheral participation to full participation (Lave & Wenger, 1991; see also Rogoff, 2003). Over long periods of time, which is the amount of time that has interested these authors, this might not be all that difficult to establish. However, learning must happen somewhere and someplace, and building on a conversation analytic understanding of how things happen, this is in interaction. Further, also the “big-scale” learning consists of many small steps and gradual changes. This is a discussion that is not developed in this text, but something that I will continue working on.

Issues of learning are closely related to issues of cognition and intersubjectivity. To me, it has thus been important to address cognition and how this research is related to my own work. In this chapter, I will introduce the general theoretical framework within which the study is done. Given the conversation analytic inductive approach, theoretical issues are raised and further developed in relation to the analyses (cf. Wootton, 1997:20).

What is presented in this chapter could thus be understood as points of departure, and as a more general introduction to the theoretical framework informing the way that I understand and approach learning in/as interaction. I will begin by an introduction to some of the basic principles of conversation analysis and to the analysis of talk, embodied action, and material environment. My point of entry into the analysis of learning in interaction is conversation analysis. This has a number of consequences for the way that I approach and understand learning and cognition, consequences that will be outlined in the present chapter.

Conversation Analysis

Conversation analysis is the study of the meaningful organisation of people's activities in society, and how this is accomplished in interaction between people. Regardless of the name

conversation analysis, the object of study is thus not conversation in and by itself. Heath (1997:186) writes that conversation analysis is not concerned with language *per se*, but rather “derives from the recognition that talk is a principal means through which we produce and recognize social actions and activities”. Conversation analysis is a sociological discipline, building on the work of Goffman (i.e. 1963, 1967) and Garfinkel (2007[1967]) and ethnomethodology. One of the fundamental principles of ethnomethodology, and which has had a decisive influence on the development of conversation analysis, is the emphasis of the importance of the observation of members’ methods, or in other words, the importance attributed to the point of view of the members, or participants, which is how I will primarily refer to them in the following.

When studying activities, the primordial focus of analysis is multiple participants in interaction rather than the individual. The contributions of individual participants are analysed as interactional actions engaging the collectivity of participants, where analytic focus is directed towards the ‘doing together’. There is thus a primacy given to interaction. Consequently, even actions that appear to be individual or personal, do not and cannot escape an interactional analysis aiming at the redefinition of notions such as cognition and learning – areas that are traditionally thought of as more or less strictly individual phenomena that are not thought of as under the constraints of interaction (Gülich & Mondada, 2001).

Activities and practices are thus accomplished in interaction. An intuitive impression of conversation might be that it is chaotic, or at least haphazard. However, on the contrary, conversation analytic research has been able to demonstrate that interaction is systematically and methodically accomplished by participants that are engaged in a constant work of coordination, synchronisation, and adjustment of their perspectives. In line with the ethnomethodological principle outlined above, the principle of order – order at all times, as Sacks put it – rests on the fact that the orderly character of conversation is the participants’ concern before it is the concern of the analyst. It is produced and sustained in a locally situated fashion through the participants’ procedures.

The description of order rests on a fundamental notion of sequentiality and temporality. Conversation analysis is primarily concerned with the ways in which utterances accomplish particular actions by virtue of their placement and participation within sequences of actions. The primary units of analysis are sequences and turns-within-sequences (Heritage, 1984:245). At all times, it is a turn in its sequential environment that is focused, rather

than the turn in isolation. The sequentiality, further, is sensitive to the temporal development of conversation, where each turn is tied to what precedes it and projects what will come next. Each and every action both empirically and normatively projects an array of possible next actions to be undertaken by a next speaker. In doing some current action, speakers normally project (empirically) and require (normatively) the relevance of a 'next' or range of possible 'next' actions to be done by a subsequent speaker (Heritage, 1995:398). It is important to notice that conversational organisation is not a deterministic or mechanistic system. Conversation analysis cannot predict what people will do in every given situation. There seems to be certain preference structures, such as the preference for agreement described by Pomerantz (1984). However, this system has also been called into question, and M. Goodwin (1990) has argued that in some situations there might even be a preference for disagreement (for a discussion see Dersley & Wootton, 2002). The important point to be made here-and-now, is that interaction is orderly and in order to maintain intersubjectivity this order is oriented to by the participants. Not just anything can be done as a next action without the participants orienting to it as something being out of the ordinary.

Sequential organisation is both an integral feature of the social organisation of talk and a methodological resource for its analysis (cf. Heath, 1994:187, Sacks *et al.*, 1974:728-729).

Another important fundamental finding of conversation analysis is how speakers, through the very organisation of conversation, co-construct a shared understanding of the current undertakings. In proposing a next action that is tied to the prior action, a next speaker orients to what has preceded and manifests the way in which he or she treats and understands it. In constructing a turn at talk, speakers normally address themselves to preceding talk and, most commonly, the immediately preceding talk. Speakers design their talk in ways that exploit this basic positioning, thereby exposing the fundamental role of this sequential contextuality in their utterances (Heritage, 1995:398). The second speaker thus makes public and observable the way that he or she understands or interprets, for all practical purposes, the prior turn (in demonstrating how he aligns to the prior utterance, how he understands the topic, etc.). S/He makes public this interpretation for the other participants and most notably the prior speaker, whose actions in third turn displays whether s/he accepts or repairs the understanding of his first turn. Through the production of next actions, speakers show an understanding of a prior action and do so at a multiplicity of levels – for example, by an 'acceptance', a participant can show an understanding that

the prior turn was possibly complete, that it was addressed to them, that it was an action of a particular type (e.g., an invitation) and so on. These understandings are (tacitly) confirmed or can become the objects of repair at any third turn in an on-going sequence (Heritage, 1995:398). This dynamic organises the fundamental sequentiality of the exchange, which has effects on the methodology (for example in the analytic focus on the sequential placement of turns) and on the understanding of conversation in itself that is argued by conversation analysis.

What has been mostly developed within conversation analysis is the analysis of the organisation of *talk-in-interaction*. The study of telephone calls was partly a matter of access to rather easily recorded materials (at the time audio recordings were better developed than video) but not least important a matter of being able to study an organisation of interaction where participants were to a large extent not relying on embodied action and a material environment, but instead had to make these aspects relevant to each other in talk. For my interests however, the inclusion of embodied actions and material environment along with the study of talk, is of crucial importance.

Embodied interaction in a material world

Important findings underlying the sequential organisation of talk-in-interaction, is that one party talks at a time and that speaker-change recurs (Sacks, Schegloff & Jefferson, 1974:700). This however, puts focus on the alternating speakers, whereas the hearer remains in the dark. Goodwin (2000b:159) (instead) writes that the “identities of speaker and hearer are the most generic participant categories relevant to the production of a strip of talk”. In order to be a possible next speaker you are required to listen, but it turns out that being an active hearer involves more than that. It requires “situated use of the body, and gaze in particular, as a way of visibly displaying to others the focus of one’s orientation” (*ibid.*). In order to monitor the hearer, speakers “not only use their own gaze to see relevant action in the body of a silent hearer, but actively change the structure of their emerging talk in terms of what they see” (*ibid.*).

From a conversation analytic perspective, the importance of gesture and other embodied action has always been recognised. It has however taken a longer time to develop an analytic framework capable of encompassing talk, embodied action, and gestures. In an important line of work, Goodwin (i.e. 1980, 1981, 1994, 2000a&b, 2007) demonstrated how talk, embodied action and material environment is integrated into analysis. Interaction is

considered an integrated practice, where different sign systems – talk, gestures and material structure in the environment – are brought together and elaborate upon each other.

As Heath (1997:188) points out, “whilst visual conduct with and within talk is not necessarily organized on a turn by turn basis, we can inspect the ways in which the participants respond to each other’s actions as a way of investigating how their activities may be organized”. It can be useful to consider the “ways in which participants’ actions may be sequentially related to each other, even though next actions may occur prior to next turn” (*ibid.*). The embodied actions may have (but don’t necessarily have) a different temporality than verbal utterances in that they can be sustained for a longer time than talk, that dissipates when having been produced. The sequential relations between visual and vocal actions remain a critical property of their organisation (Heath, 1997:196).

There are different ways of understanding what the role of gestures is and what actions they are doing. Generally speaking, in line with the general focus on actions within CA, gestures are understood in terms of their import in accomplishing action and are thus not an add-on. It is still quite common to treat gestures as bearers of meaning in and by themselves, where the categorisation of gestures consequently is important, and where the gestures are seen as directly tied to the inner psychological life of the individual (i.e. McNeill, 1992). When gestures are argued to have to be studied in the interactional context in which they are produced, it is still quite often the individual speaker that is in focus (i.e. Kendon, 2004).

In studies of interaction taking into account both talk and embodied action, the notion of *multimodality* is often used. I have chosen not to use this terminology, as I have found that the way that it is used implies that interaction goes on in different modalities, in different channels, and that these to some extent can be treated and analysed as separate from each other. It is useful, as Goodwin (2003b:9-10) points out, to see that many forms of human action “are built through the juxtaposition of quite diverse materials, including the actor’s body, the bodies of others, language, structure in the environment, etc.”. To me it is important to emphasise how the participants are orienting to these however diverse materials in an integrated way, and I believe that the consequence is that the analysis should also take into account this integration.

Participation and learning in a socio-cultural perspective

A growing and increasingly influential perspective on learning is what is often referred to as a socio-cultural perspective. Embracing different ways of approaching learning, a common point of departure is the emphasis on the human being as a social being, acting within different contexts. This acting is captured in the concept of participation, where people are thought of as participating in social and situated practices, leading to what Sfard (Sfard, 1998; Sfard & Lavie, 2005) has argued as a “participationist” view of learning. There are a number of researchers who from somewhat different standpoints have taken part in formulating this rapidly growing field (for reviews and overview, see e.g. Chaiklin & Lave, 1993; Rogoff, 2003; Sfard & Lavie, 2005 and Säljö, 2000, 2005).

In the book *Situated Learning*, a seminal text in the field, Lave and Wenger (1991) initiate a general rethinking of the concept of learning, where learning is connected to a theory of social practice and socio-cultural continuity and change. They argue that learning is not a phenomenon that is restricted to different institutional settings designed for teaching and learning, but instead an intrinsic part of all human activities. In the introductory chapter to the much referred to *Understanding Practice* (Chaiklin & Lave, 1993), Lave writes that

there is no such thing as “learning” sui generis, but only changing participation in the culturally designed settings of everyday life. Or, to put it the other way around, participation in everyday life may be thought of as a process of changing understanding in practice, that is, as learning.
(1993:5-6)

Within the socio-cultural understandings of learning, the concept of participation is used to describe processes occurring over quite substantial periods of time, as a global concept for describing the doings of people and how they change, such as the ways in which novices gradually become skilled practitioners. In terms of introducing, arguing, and establishing alternative understandings of learning, the concept has been immensely important. However, it is also important to point out that to researchers such as Lave and Rogoff, participation is not intended to be a technical term for describing in detail the practical doings of people in interaction. The fact that the very same terminology is used in other

approaches to understanding human interaction is something that will prove to be both generative and problematic.

An architecture of intersubjectivity

This heading is borrowed from Heritage (1984:254). An interpretative corollary of the action template aspect of adjacency pairs: a first speaker can use his or her action as a presumptive basis on which to interpret what a next speaker says.

Shared/mutual understanding as something practically managed in talk, rather than a series of actual mental states that precede and result from it.

Intersubjectivity mainly approached through repair etc. The study of repair has become quite common in research on learning/interaction in educational settings. It has proven to be a particularly useful way of studying changes over time, as for example demonstrated by Martin (2004). Within the second language acquisition literature ...

However, when we as participants in interaction orient to each other's actions, the only time we have access to what we understand as our interlocutor's ways of understanding the world and the situation in which we find ourselves is not when there is some repair of understanding being made relevant. The collaborative construction of understanding is not exclusively done when repair is being done but instead all the time. This is one of the basic claims of CA (Sacks, Schegloff & Jefferson, 1974), but a claim that to some extent seems to have lost ground when it comes to issues of learning.

What is particular to the educational context is that it is not just shared understanding in general that needs to be established. Rather, both the student and the teacher can later be held accountable for who has understood what ... Consequently, some special work might be involved in assuring a shared understanding, special work that can be studied.

Participation and cognition

In line with the new directions of learning research, the concept of cognition is undergoing a similar rethinking within the field of research on cognition. This change can be described as a shift of focus from cognition being *about* the world to cognition being *with* the world. Lave and Wenger (1991) argue that learning involves the whole person acting in the world in terms of an increased participation in different "communities of practice." Learning is an integral part of all social practice, and they argue that "learning, thinking, and knowing are

relations among people in activity in, with, and arising from the socially and culturally structured world” (Lave & Wenger, 1991:51). The authors insist on the need to question and rethink dichotomies such as body versus mind, inner versus outer. In reaction to more mentally oriented theories on learning, they argue that a concept such as internalisation of knowledge is not a fruitful way of thinking about how we learn things. Knowledge is not to be understood as something that is to be found ‘out there’ in a solid and static state, where the task of the learning individual is to internalise this knowledge. Instead, Lave and Wenger offer the concept of participation:

Participation is always based on situated negotiation and renegotiation of meaning in the world. This implies that understanding and experience are in constant interaction – indeed are mutually constitutive. The notion of participation thus dissolves dichotomies between cerebral and embodied activity, between contemplation and involvement, between abstraction and experience: persons, actions, and the world are implicated in all thought, speech, knowing, and learning. (1991:51-52)

As a consequence, a view of cognition as socially distributed is arrived at. Cognition is no longer perceived of as something that takes place inside an individual’s mental mind, but as taking place in the relations between people in different contexts. Lave (1997[1988]:17) writes that the appropriate unit of analysis is the whole person in action, acting with the settings of that activity”. The boundaries of activity are thus placed well outside the individual mind to persons engaged with the world around them (see also Hutchins work on socially distributed cognition, i.e. 1993, 1995).

In line with the thinking of Lave and Wenger described above, building on a long-term body of empirically driven interaction research, Charles Goodwin has developed an understanding of human sociality that both in theory and practice demonstrates the relevance of understanding human action and development as public, embodied, and contextually situated. Goodwin (2003:239) writes that the primordial site for the study of human action is “multiple participants using talk to build action while attending to the distinctive properties of a relevant setting”. Further, in line with a rejection of views that situates all cognitive phenomena within the mental life of the individual, he argues that

cognition is a reflexively situated process that encompasses both the sign-making capacity of the individual, for example through the production of talk, and different kinds of semiotic

phenomena, from sequential organization to graphic fields, lodged within the material and social environment (Goodwin, 2000a:1490).

In other words, cognition is a public and social process, where the micro-perspective adds to the socio-cultural perspective a strong focus on the details of language use and conversational organisation. Further, Goodwin (2000a:1491) argues that a theory of action must come to terms with both the details of language use *and* “the way in which the social, cultural, material and sequential structure of the environment where action occurs, figure into its organization”. I argue that this way of viewing cognition provides us with the theoretical and analytical tools with which it is possible to override the dichotomies between individual mental life and socio-cultural environment.

The kind of “participation” argued for within the cognitive approaches, here exemplified by Goodwin, resonates well with the socio-cultural understandings of participation in many respects. However, there are also important differences. The most important of these is that in Goodwin’s understanding, participation is a micro phenomenon, accomplished in the complex, situated moment-by-moment constitution of human sociality. It is in constant flux, and what is of interest to Goodwin, is the organisation of this flexible phenomenon. Although similar in its appearance, Goodwin’s understanding of participation is in many respects different from socio-cultural understandings of the very same concept.

Participation and learning within a conversation analytic perspective

Within conversation analysis (CA), an interest in participation in a micro sense has been the core of the discipline. It is also on the basis of this core that a growing body of CA research on learning has begun to emerge, although generally speaking, it is fair to say that learning is something that has not been at centre-stage of CA research. The concept of learning has perhaps been too readily associated with mentalistic notions of cognition as located in individual minds – ideas that are either explicitly rejected or considered as lying beyond the scope of CA (cf. Edwards, 1997; Potter & te Molder, 2005; Schegloff, 2006 for discussions of conversation and cognition). Notions such as learning, understanding, and cognition are often associated with a cognitive apparatus, as something having to do with the mind or the brain where interaction as a consequence is reduced to a matter of transmission of for example information or knowledge. Work within CA has instead demonstrated that interaction has its own structures and constraints, and that these

structures and constraints bear on both cognition and learning. As Schegloff (1991) writes, interaction

enters into the very composition, design, and structuring of conduct and is part and parcel of whatever processes – cognitive or otherwise – are germane to the conception and constitution of acts, messages, or utterances in the first instance (Schegloff, 1991:153-154).

In recent research, a growing amount of researchers have successfully attempted to find ways of working empirically with learning and socialisation within a conversation analytic framework, arguing that CA has an understanding of “participation” that substantially adds precision to educational research on learning and socialisation. Within this body of studies, a distinction can be drawn between a small group of studies that argue that someone has learned something (e.g. Martin, 2004; Nishizaka, 2006; Wootton, 1997), and a larger group of studies that on the basis of empirical analyses argue in principle for the relationship between interaction and learning/socialisation (e.g. Björk-Willén, 2006; Cekaite, 2006; Cromdal, 2005; Evaldsson, 2005; Liljestrand, 2002; Macbeth, 2004; Sahlström, 1999, 2002; Slotte-Lüttge, 2005).

An example of the first, smaller, group is Wootton’s (1997) monograph entitled *Interaction and the Development of Mind*. Wootton presents and empirically argues for a sequential approach, where the perspective of CA is used to analyse a child’s development over time (in this case several years) in terms of changes in the way that she performs requests. Requests are ways in which the child is trying to enlist some form of assistance from her parents. Another example is Martin (2004). She studies learning as interactional change, explicitly combining CA with a socio-cultural view of learning, showing that there is a development over time from “other” to “self” in terms of how the learning initiates and completes the repair action. In this way, Martin is able to demonstrate learning as changes in participation in relation to a specific content in a convincing way. Nishizaka (2006) analyses two instances where a child learns to play the violin, with an explicit focus on the learning of learning how to play quarter notes. Much in the same way as I have argued and attempt to do the analyses, Nishizaka locates the developing understanding of how to play quarter notes in interaction, at the intersection of bodies, artefacts, and talk. However, the article does not lay out its understanding of issues of content and interaction in a very detailed way, despite its focus on “what” to learn.

In the latter, substantially larger group, the core aspect of analysis is interaction organisation. On the basis of the interaction findings, principal consequences for learning and socialisation are argued, but the analytic focus is not on learning as such. This notwithstanding, some reasonably robust results have been generated within this line of work, such as how the organisation of participation limits student learning (e.g. Sahlström, 2002) and how mono-lingual classroom norms are upheld (Slotte-Lüttge, 2005).

As displayed in the growing body of CA research on learning, it is clear that there are important contributions to be made by CA studies. However, in doing so it is important to recognise that the concept of participation, which provides the conceptual bridge between local interactions and claims on learning within these, in certain respects is one thing within socio-cultural understandings of learning and quite another within micro-oriented approaches to interaction.

This is made evident most clearly in the core argument, namely that learning is a matter of changing participation. In the CA sense, participation *always* changes, from syllable to syllable, from TCU to TCU, from turn to turn, from action sequence to action sequence. Quite clearly, not all of these changes can be understood as learning, and they were never meant to be understood as such by the original authors, such as Lave and Wenger (1991). Their argument that learning is an integral part of all social practice is hardly to be understood as that any and all change in interaction is learning. Within the few existing CA studies actually claiming to study learning, it also turns out that the understanding of changing participation has been operationalised as changes in a particular structural-sequential phenomenon, where some changes are focused and highlighted (the sequential development of directives and repair, for instance), whereas others are placed in the background, outside the scope of analysis.

Methodological issues

Conversation analysis is a perspective in which theoretical and methodological concerns are closely intertwined. The theoretical standpoints have quite literally been elaborated through the encounter with and investigation of empirical data, taking as its point of departure the ethnomethodological concern with members' perspectives. Not only is this true for the perspective and its history, but every analysis starts in the examination of empirical data where research questions are formulated and developed. The principal arguments "arise out of" the detailed examination of particular sequences of interaction, as Wootton (1997:16) puts it. What this means is that the analyses are not done with pre-formed ideas, hypotheses, or theories as to what key parameters that could be expected to unfold. In other words, conversation analysis can be described as inductive and explorative approach, with no intention of testing particular perspectives or theories. This way of working analytically has consequences not only for the analytical work in itself, but also for the discussion of relevant research that is discussed in relation to the analysis and considered in the light of the findings that have emerged from the analyses (cf. Wootton, 1997:20).

Working with video recordings of naturally occurring interaction

One of the fundamental features of conversation analytic research is that it is based on the careful investigation and analysis of naturally occurring data. These data consist in audio and/or video recordings of people in interaction in their everyday lives. Need to attend to what the participants are attending to – participants' actions and movements within a material setting. Analysing the temporally unfolding processes of practices taking into account both human interaction and tool use requires as empirical data recordings that capture not only talk but encompasses the movements of the participants in the activity and the phenomena that they are attending to.

In conversation analysis, it is emphasised that it is recordings of naturally occurring interaction that the researcher works with. The importance of the recordings for the development of the perspective cannot be stressed enough. The possibility of listening and

watching, not only once in real time, but over and over again is part and parcel of the approach. In an often-quoted passage Sacks writes:

I started to play around with tape recorded conversations, for the simple virtue that I could replay them; that I could type them out somewhat, and study them extendedly, who knew how long it might take [...]. It wasn't from any large interest in language, or from some theoretical formulation of what should be studied, but simply by virtue of that; I could get my hands on it, and I could study it again and again. And also, consequently, others could look at what I had studied, and make of it what they could, if they wanted to disagree with me. (Sacks, 1992, 1:622 in Gülich & Mondada, 2001:200).

Working with video recordings raises both methodological and analytical issues. It is important to remember, that the recordings are not unproblematic representations of life, representations of the world lending itself to the scrutiny of the researcher. Instead, all along the research process decisions of consequence to possible analyses are made. Using a video camera to document everyday practices is not simply documenting what people are doing, rather, the researcher's eye and interests can be seen in the resulting recordings.

The empirical data

The recordings that I use come from two different settings: the early school years in the elementary school and an aviation academy. The empirical data further comes from two different corpuses. The first was collected within a larger research project called *Preschool and School in Collaboration* (financed by the Swedish National Agency for Education), and consists in video recordings of children that were followed periodically through their last year in preschool, the year spent in the preschool class and finally their first year of school. The second data corpus consists of video recordings of flight lessons, where three students were each followed and recorded during three consecutive flight lessons.

The FISK-project

The overall aim of the *Preschool and School in Collaboration* project was to study the consequences of the introduction of the preschool class (for six-year-olds, in Swedish *förskoleklassen*) for both children and institutions, something that was approached from three perspectives: interaction analyses, professions analyses, and policy studies (see for

example Pérez Prieto, Sahlström & Melander, 2003; Karlsson, Melander, Pérez Prieto & Sahlström, 2006, see also Karlsson, 2006; Heikkilä, 2006). Providing ground for the interaction analyses, video recordings were made of groups of children that were followed periodically during their last year in preschool, the year spent in the preschool class and finally their first year of school.

I participated in the last part of this fieldwork (for a general description of the fieldwork see Häggblom, Melander & Sahlström, 2003). However, people other than myself have recorded the two sequences that I have chosen for analysis in the thesis. One of them, the jump rope sequence, was recorded at the same school where I did fieldwork, whereas the other was recorded in another school that I have only visited.

From this data corpus, I have chosen to work with two sequences. The first one is a recording of a group of children reading in a picture book together. The book has text too, but the children orient exclusively to the pictures. The second sequence is a recording from the schoolyard, where three children are playing a game of jump rope together.

The aviation study

The aviation study was designed and carried out by myself. The recordings were done in an aviation academy in Sweden during Spring 2006. In total three students were each followed and recorded during a series of three consecutive flight lessons where each flight lesson consists of a pre-flight briefing session, the flight lesson itself, and a debriefing session. The flight lessons are part of an aviation course offered within one of the three-year natural science programmes of the Swedish Upper secondary school. When deciding upon the design of the study it was considered important that a series of lessons were recorded. The reason was that I wanted to be able to study processes that developed over time, that I wanted to be able to study (micro-)longitudinal changes.

The students participating in the study were taking the first, basic course representing the very first step on their way to becoming commercial airline pilots. The choice of students was not done by me, but by my contact at the academy. The only instruction that I had given regarding criteria for selecting the students, was that I preferred that they had approximately the same experience of flying. At the time of the study, they had done about thirty hours in the air.

In this aviation academy a group of teachers were working as instructors of a group of students. (Another practice is that the students are assigned particular teachers that take

them through the whole process.) This meant that five teachers participated in the study. In total, the data amounts to approximately 14 hours of recordings. In addition to the recordings, I collected copies of the documents that were oriented to by the participants during the lessons.

In my thesis, I am using the recordings of one of the students. The reasons for this choice are both practical and analytical. First, the student is flying on instruments only, which means that she is relying on the information provided by the instruments without looking outside the airplane. This facilitates analysis, as it was possible to capture the computer displays and other instruments with the video camera. Second, she is practicing the same manoeuvre in all three of the flight lessons. This made it possible to capture a development in her performance over time.

The recordings were done simply following the students with a camera. I did not interact with the participants through asking questions etc. during the recordings. However, sometimes I talked with primarily the students. The time in between the recordings I spent in the coordinator's room, where people were coming and going, picking up information, keys to the airplanes, headphones, filling in forms and documents, etc.

Ethnographic knowledge and frames of reference

Working with materials from different settings, and further some materials that I myself have recorded and others that I haven't, raises questions around the role of ethnographic knowledge and frames of reference (or prior experiences).

The recordings from the early school years that I have worked with were in a sense familiar to me. First of all, I did participate in the field work and the research project more generally. But the school setting is further something that I had prior knowledge and experience from through my own experiences as having been a student (albeit long ago, I am convinced that these are part of the frame of reference with which I interpret and understand what I see happening in the recordings). Further, having children in school that at the time were about the same age as the children in the study, also contributed to the feeling of familiarity with the setting.

In that sense the aviation study was different. It confronted me with a technical terminology and to a large extent I simply did not know what they were going to do during the flight lessons. Further, what I know about aviation more technically, has developed in

this encounter, and I have hence found it useful to check my understandings of the ongoing events with my contact at the aviation academy and two professional pilots. At the same time the difficulties should not be exaggerated. What I could recognise was for example the educational setting. Further, my understanding of what was going on was facilitated by the fact that the students did not have much experience, and that things that I suspect are later taken for granted, were oriented to and talked about.

Working with material recorded by someone else is a special practice. For example the choice of where to put to camera has already been made by someone else, a choice that does have consequences for analysis. To me, the consequence has been that I have chosen to work with sequences where the participants are visible during most of the time and where it is possible to see and hear what they are doing. The most important difference instead concerns the matter of having experienced – or not – the situation. Being present in the situation with a camera in hand makes you into a participant even if you are not directly interfering in the ongoing activities. Consequently, an important question that is raised when working with materials recorded by others concerns the role of ethnographic knowledge. In my case, I did have some ethnographic knowledge of the setting, particularly from the school that I did field work in myself. Working as part of a team in a research project also made it possible to take part of the ethnographic knowledge gathered by the other members of the team.

Conversation analytic stance: “... we need to press inquiries into what speakers can do – *do* do – with language and the other resources deployed in interaction. And we need to press those inquiries especially with materials to which we bring native competence and cultural membership.” (Schegloff, 1996:167).

“For this reason, conversation analysts rarely rely on ethnographic data and instead examine if and how interactants themselves reveal an orientation to institutional or other contexts” (Maynard & Clayman, 1991:407). I believe that this should be understood in the way that conversation analysts do not, for example, let the fact that interaction is going on within a specific institutional setting as ground for the claim that it is institutional talk, but rather that that orientation has to be demonstrated by the participants. However, especially when studying practices like the aviation context of which I do not have previous knowledge, it is necessary, in order to make sense of what the participants are doing, to have some kind of understanding of what is involved in the practice. This is how Schegloff's claim, that we should “press inquiries especially into materials which we bring native

competence and cultural membership” (Schegloff, 1996:167) can be understood as taking the stance that we should only study practices that we are ourselves part of. However, I believe that an outsider’s perspective is also at times useful. Moerman (1996:149) writes about doing conversation analysis on foreign language materials that “those materials make it easier to see strangeness, to notice managedness and constructedness, to be struck by the problematic and the enchanting in everyday talk”. This is something that I at least hope that my outsider’s perspective might contribute to.

Some initial comments on the analytical work

It is in the encounter with the activities of the children and young adults, that my research questions have been formulated, and not before. I started out analysing the reading sequence, which has turned out to be an analysis of how the children co-construct a content of learning, which is the size of blue whales. When I initially analysed the sequence, I was studying how the practice of reading a book together was constituted in interaction.

Collections based on:

- The reading sequence:
Every time that the children were orienting to the size of blue whales.
- The recoveries from unusual attitudes.
The collection is done based on orientations to unusual attitudes.
- The jump rope sequence
The collection is not ready, but is building on two “themes”: the first is the issue of how to turn the rope and the second is about how to begin jumping.

More generally about collections in CA.

Mondada (2005) argues that the single case analysis precedes the building of a collection. The single case analysis aims at “rendre compte de la spécificité d’un corpus particulier” (Mondada, 2005:102) and the analysis of collections aims at describing “généralités et systematicés traversant plusieurs corpus” (ibid.). Schegloff has described a similar procedure in terms of finding something interesting and then finding the larger

practice (better written about in 1996 – confirming allusions). Quite often the collections consist of phenomena that are defined by their sequential positioning, whereas my collections look different. Will be developed ...

Careful investigation of single cases, where however there is simultaneously a collection (even within the single cases!). However the collection is not one of phenomena defined by their sequential positioning, but rather one following the sequential (and thus chronological) development of actions. Even when a single case is analysed, I would argue that it is not a single case analysis (the blue whale and jump rope sequence). Instead, the collections consist of sequences in a longitudinal order rather than examples of repair, assessments, etc. Working in the spirit of Goodwin, I then contrast the findings and materials with each other.

A third (- another!) way of addressing the issue of single case versus the building of collections, is to use contrasting cases, thereby demonstrating how the same issues are relevant in quite different activities and contexts. This is how I understand that Goodwin is working in his later work. See also Mondada (2005).

To be able to contrast the different materials, what is first of all required is a thorough investigation of the materials in themselves. At this stage, when I am presenting my work as it stands approximately half-ways, I have not yet been able to do the contrasting part, but instead that is part of what lies ahead.

In the working out and the presentation of my analysis I follow the chronological order in which the situation developed. How the situation unfolds is important in order to capture and analyse how understanding develops, and how there is both change and continuity.

The art of representation

A part of the scientific practice is the transformation of the empirical data into representations of different kinds. The representations are an invitation to the reader to “see what is being said” (Lynch, 1990:155 with reference to Morrison, 1988).

As Bucholtz (2000) notices, transcripts are not objective representations of a known world, but instead reveal choices made by the transcriber. Transcriptions “testify to the circumstances of their creation and intended use” (Bucholtz, 2000:1440).

The text produced in the conversation analytic transcripts could be said to be images, rather than text in the conventional sense. The representation of verbal talk aims at capturing not only what is being said but what it sounds like and to some extent how it is produced (intonation, etc.). Bucholtz (2000, following Green *et al.*, 1997) distinguishes between transcription as an interpretive process and transcription as a representational process. “At the interpretive level, the central issue is *what* is transcribed; at the representational level the central issue is *how* it is transcribed. Thus transcription involves both decisions about content (What does the transcriber hear on the recording and include in the transcript?) and decisions about form (How does the transcriber write down what she or he hears?) (Bucholtz 2000:1441). These two levels are not separate from each other, but it can be useful to be aware of them.

The relation between the surrounding text and the representation – what does it look like? It is sometimes said that the models and illustrations that are used in a text should be interpretable independently of the written text and vice versa. I believe that the representation and the text rather support each other, and that it is important that the reader can go between the two. It is sometimes said too, that the transcripts do represent ‘raw data’ in the sense that they are also present in the text as a way of validating the discussion. The transcripts are there to give the reader access to the empirical data upon which the analysis is based.

Translating interaction into text is one of the challenges when working with video materials. As Ochs (1979) quite some time ago by now has pointed out, transcription involves theoretical decisions.

Ideally, we want our transcript to meet practical as well as theoretical considerations. We want our transcripts to express the relation between non-verbal and verbal behavior as accurately as possible: We want it to encode not only prior and subsequent behaviours, but cooccurrent and interoccurrent behaviours as well. We do not want a transcript that discourages the reader from integrating verbal and nonverbal acts. On the other hand, we want a readable transcript, one that displays clearly and systematically utterances and contexts. (Ochs, 1979:59)

The transcription of the recorded data into textual artefacts is crucial. Perhaps the most obvious reason for transcribing our data is that we need to be able to, in some way, present it to our audience, an audience which is very often communicated with in text. As Goodwin (1994:607) so elegantly formulates it: “the rich record of complicated vocal and visual events moving through time provided by a videotape must be transformed into something that can silently inhabit the printed page”. But producing the transcripts is further an important part of the analytical work. Transcribing could be described as a method of disciplined observation. Moerman (1996:154) writes that “... it takes the work of transcribing to make the texture and structures of conversation real”. Transcribing what can be seen and heard on the recordings makes you sensitive to what it is that is going on. In fact, many times you actually for example hear what is going on only when you have to write it down, deciding on what it is that you can hear. Sometimes a small movement of a hand, a shift of gaze, or a slight hesitation in the production of a word reveals that something interesting is going on, something that at times alters at other corroborates the first impression. A crucial part of the conversation analytic practice is to constantly return to the recordings, playing them over and over again. It is in the encounter with the recordings – the empirical data – that the analysis is done, where the process of transcribing is part of the analytic practice but where the resulting transcripts and representations are representations and do not ever constitute the data.

Conversation analysis has a longstanding tradition of transcribing talk. Already from the beginning the smallest details were considered of potential importance and thus worthy of analysis. Jefferson (2006). We cannot know in advance at what level we should stop the transcription, capturing the details of how words are pronounced may add a layer to interaction, and we might not see it before we try to capture it (cf. Jefferson, 1983). Parallel to the development of the (theoretical) perspective, a system for the transcription of talk was developed in which the way that the turn is produced is transcribed, finding ways of representing for example sound stretches, the annotation of slight changes in pitch and

emphasis, etc. Although many researchers refer to the Jefferson transcription system, it is not a closed system in the sense that there is once and for all a way of representing interaction. Perhaps most importantly, it refers to a way of approaching the data, a way of making visible different aspects of the production of turns, providing us with some kind of common language for how to represent aspects of talk.

“Such markings on transcripts [stretches, latching, overlap, pauses, emphasis or volume change] are not merely our version of the graffiti that youth gangs use to mark their territories. Rather, they record actions that are essential to the organization of conversational interaction, actions no less – and sometimes more – important than words.” (Moerman, 1996:153).

Transcription in a conversation analytic tradition is a matter of capturing in written text what can be heard, and in so doing staying faithful to the data, which means being careful in transcribing what is actually happening. This sounds easier than it is, particularly if – as is the case for conversation analysis – even the smallest details are of potential interest. This is in a sense further complicated, as the researcher does not yet know exactly what s/he is looking for during the initial stages of transcription (cf. period of ‘unmotivated’ examination, Schegloff, 1996:172).

A quite practical issue with analytical implications is how to spell the lexical units of which the verbal turns are constructed, in a way that captures the way that they were produced. Spoken discourse and written language have different rationales. We are used to ways of representing spoken language in the literature. The way that this is handled within conversation analysis is that the spelling of the written (norm) word is changed so as to accommodate the spoken utterance. However it is usually (and so too in my case) done using non-standard ways of writing the spoken words, and not for example a phonetic system. Bucholtz (2000) criticises this stance, and argues that a phonetic transcription might sometimes clarify the analysis where it is blurred by an imprecise use of non-standard orthography. To me this is something that has to be resolved in relation to what the research interests are. When transcribing the talk, my aim is to render the reader a feeling for what the talk sounds like. Bucholtz (2000) further remarks that some words simply are always pronounced in a specific way, such as the Swedish “mig” which is regularly pronounced “mej”. Following Bucholtz, in this case it would make sense to simply write “mig” as the readers would read it as the sought for “mej”. In this case, and others like it, I

have however chosen to write “mej” as I believe that this way of writing it adds to the impression of a talked conversation rather than a written script.

Transcribing embodied action in a material world

When it comes to the representation of embodied action and orientation to aspects of the material environment, there is no similar system for transcription. Already when transcribing talk only, conversation analytic transcripts tend to be treated as difficult to read and interpret. And one of the most difficult challenges is to keep the transcripts readable. As Goodwin (2000b) has remarked, the representation must attend simultaneously to two separate fields. One of the fields is the events that are being investigated, and how to accurately recover “through a systematic notation the endogenous structure” (Goodwin 2000b:161) of these same events. The other field, or direction, is that of the addressee/reader of the analysis, by attempting to present relevant descriptions as clearly and vividly as possible. (*ibid.*). Transcription is a constantly ongoing process, and needs to be done and redone all along the work. Different stages of analysis and presentation require multiple transcriptions. To this could be added that the representation also reflects the interests of the researcher in a here-and-now, and can thus change as different arguments are being made. There is a recursive interplay between analysis and methods of description.

The two most common ways of handling this issue is, first, by including descriptions of embodied action etc. into the transcripts of talk, and second, by including images, most often frame grabs from the recordings. These frame grabs are sometimes inserted into the transcripts, but very often the choice has been to put the images in a separate place – either in a new representation representing some kind of alternative or for example below the transcript of talk, with references to the images. Separating representations of talk from other actions and descriptions however runs contrary to the ambition of integrating these same actions in the analysis and thus in the representations. As Ochs (1979:54) argues, in placing the verbal and the non-verbal actions in different places on the paper, the transcriber heightens the perception of these behaviours as distinct. It gives an impression of interaction going on in different channels, an understanding of interaction that I actively resist. Further, describing different nonverbal actions within brackets in the transcripts risks the danger of marking nonverbal actions as somewhat less important, as secondary actions in relation to the verbal interaction.

I work with my representations in different ways. The transcript is always a result of analytical considerations, of the analytical points that you want to make. In fact, the transcripts are part of what constitutes the researcher's professional vision (cf. Goodwin, 1994), where different aspects of the ongoing interaction are highlighted and made salient by the researcher developing his or her analysis. As Goodwin (1994:607) points out, the highlighting made in the transcripts guides the reader to see within a complex perceptual field just those events that the researcher finds relevant to the analytical points being developed.

Already in the transcription of the talk the interests of the researcher are visible (for example, how much of prosody is represented, etc.). When it comes to the inclusion of embodied action it is simply not possible to even pretend that the transcript is a full representation. One solution is to publish, whenever possible, the video clip upon which the analysis is based (for an ethical discussion see below). However, in most circumstances it is not possible to do so, and perhaps not always the best thing – ethical issues notwithstanding. As has been argued above, the representations are reflections of analytical interests, and further they should be so. A video clip embedded within a paper – when possible to provide that – does not provide an analysis of how the events are being parsed by the participants. Goodwin (2000b:161) writes: “The complexity of phenomena involved requires multiple methods for rendering relevant distinctions (e.g. accurate transcription of speech, gaze notation, frame grabs, diagrams, etc.)”.

The publication of images also presents us with ethical issues that we need to discuss. When entering the field we promise the participants that their identities will not be revealed. In anthropology through longstanding tradition the matter has been treated differently. I believe that it is important not to draw an equal sign between the publication of an image *per se* and a violation of the participant's integrity. Images are not inherently dangerous. My position is that images in themselves are not problematic, but I believe that there are also other pressing issues when it comes to how to represent embodied action and orientation to a material environment. One example is the often poor quality that is a result of using frame grabs. My solution has been to work with drawings instead.

How the participants create a joint focus of attention. How the interaction space is constituted and upheld. What is it that they are talking about – pointing at displays, demonstrating how someone is holding a jump rope.

In my work with the drawings, I first make frame grabs from the video clips. These are then opened in PhotoShop where I trace the outlines of the participants and (aspects of) the surrounding environment. I then export the tracings to Illustrator, where I transform them into drawings. All the time, great care is taken to stay faithful to the original image, something that is important to emphasise. What is in the resulting drawing is a representation of what could be seen in the frame grab. The tracings are thus always tied to specific frame grabs.

When producing the tracings and drawings aesthetic judgements have also been made. I have added a somewhat artistic allure to my drawings. With an interest in interaction between people and with the exigencies to stay close to the data I have sometimes felt that the drawings deprive the represented participants of their flesh and blood. My way of keeping them “alive” has been to make the lines softer, introducing what I believe, and hope that others see in them, a breath of life that was certainly there when the recordings were done, but that is also present in the sequences that I work with.



Part of the researcher’s professional vision, determining not only what to highlight in each specific image, but further what to highlight in the sequential context.

When the frame grab is taken and the drawing is done, a passing moment in time is being fixed. However, embodied action is motion. The passing time is an intrinsic part of interaction that is constantly moving onwards, where there is a flow of movements; words are uttered and dissolve, facial expressions change, hands trace a line in the air, fingers point out a direction, gaze is directed at different things in the environment. In the fixed image aspects of the ongoing action are highlighted. What does get lost is the sensation of movement and passing time however, an aspect that is crucial to the participants in interaction.

The pictures “transform previously hidden phenomena into visual displays for consensual ‘seeing’ and ‘knowing’” (Lynch, 1990:155). The image of *filtering*, of resulting in public access to new structures “wrested out of obscurity or chaos” (*ibid.*:156). The members of the pair (frame grab and drawing) have a directional relationship to one another: each is an independent representation but they are not equivalent. One is dependent upon the other: the drawing operates upon what is shown in the frame grab. There is thus a sequential ordering, the frame grab being an “original” and the drawing a rendering of it (cf. Lynch, 1990). The drawings exhibit a limited range of visible qualities in comparison to the frame grab – filtering. The drawing shows less variation in shading and texture (uniforming). Upgrading – borders are made clear and distinct, shapes and divisions between distinct surfaces are made more distinct. Figure-ground relations, initially visible but less apparent in the frame grab. Part of what constitutes the professional vision of the researcher.

Translations

The empirical data that I use is in Swedish. Thus, a translation of talk-in-interaction from Swedish to English was necessary. Where focus of the analysis is interaction, and where talk is one part of this interaction, the translation of this same talk is an important task requiring attention and great care. The choice of words and expressions in a different language involves analytical considerations and decisions. As Temple and Young (2004:167) write: “If researchers see themselves as active in the research process then they have a responsibility for the way that they represent others and their languages”.

Moerman (1996) remarks that

we all must recognize, that it is never as a certified unchanging truth that the analyst presents an utterance in one language as the equivalent of an utterance in another language. Utterances are social actions. To render one onto paper in some other language is to claim that one knows and has preserved the social actions it attempted and accomplished, that one is sensitive to the speech level and poetic resonances that partly comprise it, that one understands the patterns and preferences of organized sequential activities in an alien society. Knowing a foreign language so as to translate its conversations is a product of theory, of art, of social analysis, of empathy and ethnography. (Moerman 1996:150).

Moerman was presented with the task of translating a language he did not know as a native speaker – Tai – into his mother tongue – English. My task is to translate my own mother tongue into English. There is thus always a certain uncertainty to the translations.

Some researchers choose to write three-lined transcripts, with one line for the original language, a second for a literal word-by-word translation and a third line that captures containing a more idiomatic translation than the word-by-word order and that thus conveys the meaning of the utterance in the English context. I have chosen to use only two lines of transcript – one line with the original Swedish utterance and another with an English translation of that utterance. When doing the translations I have taken care to stay as close as possible to the construction of the Swedish turn, something that sometimes leads to a strange English.

Using a professional translator is not necessarily a solution to these issues. As Temple and Young (2004) write, this idea rests upon an epistemology saying that there is a correct version. However, as the authors remark, this view ignores the translator's own active construction of meaning. Temple and Young recommend that translators are involved into the research process, which means that they should be included during a longer period of time. I have not involved a professional translator. Instead, I have started translating the ongoing talk-in-interaction early on in the analytical process, something which has also at times involved the translation of larger sequences than the ones that are represented in the thesis. However, the analysis is always based on the Swedish version – but even more so because of the constant return to the video sequences rather than the fact that the transcript has a line in Swedish. Beginning to work with the translations early on in the process, I regard them as yet another part of the analytical work and not simply a question of translating one language into another.

Further, I have involved professional pilots in the translation process. I have asked them about the technical terminology, but also how things more generally would be expressed in English.

An important reason for these two-lined transcripts is that I am working with rather large excerpts that are further filled with drawings of the participants' actions. I view the transcripts as pictures, as images. CA transcripts in general are in many ways inaccessible, and I have decided to do my best not to be more inaccessible than I judge necessary.

To the English translations I have added sound stretches, emphasis etc. in a way that corresponds to the Swedish original. I have tried to represent what I perceive of as the

rhythm and intonation of the original Swedish phrase, to give the non-Swedish speaking reader the possibility to grasp something of how the turns were produced.

The content of learning

It is fair to say that the kind of content-oriented learning that is perceived as highly relevant by mainstream learning research turns out to be mostly passed-by in micro-oriented studies. In Wootton's (1997) study the understandings and the development in the way the child is making requests, are tied to a sequential environment, and not to a specific content. In Martin's (2004) study, the patient and the physiotherapist together define a problem, for example that the patient is to learn a specific content such as how to move an injured shoulder in a correct way, but content orientation is used primarily as a way of constructing the analytical collection. Nishizaka (2006) explicitly addresses the content of learning, but in the pursuit of how to understand content and topicality in interaction, Nishizaka does not (and does not attempt to) provide any final solutions.

Within learning research in general however, it is primarily the learning of particular contents that has been in focus. Content learning is at the core of a large body of research where a general way of studying learning has been to measure the knowledge of learners prior to and subsequent to some kind of intervention, mainly using surveys. In these mainstream approaches to learning, exemplified by international comparisons such as PISA and TIMSS, content issues have not been addressed as interactional phenomena. However, also within current mainstream research on learning, there is considerable development going on with respect to how one should understand the content of learning, especially with respect to how the fundamental issue of "transfer" should be understood (cf. Lobato, 2006, Marton, 2006).

The disinterest in content issues in CA research on learning is in part a consequence of the sequentially oriented re-conceptualisation of learning as participation, but it is also in part a consequence of the relative absence within conversation analytic work more generally of studies explicitly dealing with content.

When questions of content have been addressed within CA, it is from the perspective of topic. Although conversation is arguably always about something, the relation between sequential organisation and topical talk has been demonstrated to be an inherently complex one (for an extended discussion, see Schegloff 1990). In everyday conversation, topics are

rarely marked but rather participants gradually shift the topical thrust, a practice that has been called “topic shading” (Schegloff & Sacks, 1973) or step-by-step transition (Jefferson, 1984). Instead of attempting to understand and define what topics are, conversation analysts explore how topicality is accomplished by participants in interaction. Topic is conceived of as something that is achieved, turn-by-turn, rather than defined externally by the analyst (Stokoe, 2001, see also Schegloff, 1990). Consequently, conversation analytic studies on topical talk have often focused the “mechanics of topicality production” (Stokoe, 2001:187), perhaps most importantly topic transition, that is, how topics are initiated and closed and how shifts in topic talk is managed (e.g. Button & Casey, 1984, 1985, Jefferson, 1984, 1993, Maynard & Zimmerman, 1984, McKinlay & McVittie, 2006, Stokoe, 2001). Just as in learning, primary interest is in sequential organisation rather than content.

One of the risks, as identified by Schegloff (1990:52), of focusing on the topic of some unit of talk, is that of not addressing analysis to what participants in interaction are *doing* to and with one another, thus treating talk as “talk-about” rather than “talk-that-does”. In line with this caution, Goodwin and Goodwin (1990) demonstrate how topic changes, through the invoking of different participation frameworks, are used by participants to sustain an ongoing argument. In a similar vein, Mc Kinley and McVittie (2006) demonstrate how topic shifts are done to avoid troublesome talk. In these last two studies, topic shifts are used to accomplish a certain action, where the action can be the same in spite of there having been a change of topic. Thus a dynamic view of topic changes as both a matter of content and action is created.

In the novel and original approaches to learning within CA, there is arguably still a sharp divide between on the one hand participation (understood primarily in terms of sequential structural constituents of human action) and on the other hand content (understood primarily in terms of topicality and as something to be avoided), with an overwhelming analytic focus on the former. Another way of putting this is to say that CA research on learning has not departed from the dichotomy of *how* and *what*, despite relying on theoretical underpinnings which heavily criticise mainstream learning research as being incapable of understanding “what” without knowing how to deal with “how” (cf. Lave & Wenger, 1991).

My approach here, supported by and generated in work with data, is to make an attempt at dissolving the dichotomy of what and how, by understanding topical orientation as a

constituent aspect of participation. Topic is in other words considered an intrinsic element of action. This is an understanding of content which obviously stands in sharp contrast to notions of content as a fixed pre-existing body to be learned, and to understandings of the children's learned content as something of a second-order outcome of the interaction. But it also stands in contrast to most of the prior CA research on learning, where participation generally has been conceptualised more or less solely within a sequential-structural framework.

Thus I propose that the changing ways of orienting to the size of blue whales found in the data is to be perceived as sequentially developed topical aspects of the actions carried out by the participants. Maintaining focus on the sequential organisation, I aim to take into account the development of a topic over time (that is topic beyond the moment-by-moment sequential structure), analysing changes and similarities in topic organisation through addressing how the content of the topic is developed and relied upon for establishing and sustaining interaction. In establishing a topic that I argue is the same in different instances, I am relying on the participants' orientations to some aspects of things being talked about as being of the same kind. The "sameness" is tied to the participants' use of the same lexical units to describe something (i.e. blue whale, size words) (cf. Schegloff, 2004) and their orientation to particular aspects of the material environment around them.

Empirical data

The empirical data under investigation is from a first grade classroom in Sweden. The analysis is based on a 12 minutes and 30 seconds long recording of interaction during a book reading activity, in which initially two and later three children are participating. The reading activity occurred during the first week of school after the summer holidays within the framework of "free activities," that is when the children were allowed to choose for themselves what they wanted to do.

The book that the children – whom we are calling Anna, Ebba and Gustaf – are reading is about animals (*The big book about animals*, Tison & Taylor, 1984). On each book opening there are both text and pictures. The book is encyclopaedic in character, and each page simultaneously affords and constrains the creation of new stories as animals are compared to each other in different ways; their size, their speed, the length of their tongues, etc. Most of the time when reading the book, the children orient to the different pictures

and in connection to those talk about different things. The way these children read it, the book invites to the telling of many stories, stories that are created in relation to the pictures (and not the text). Much of the interactional work that is going on is about establishing a joint focus of attention, something that the children accomplish through the use of both verbal and embodied resources.

In other words, the reading the children are doing is like a mosaic consisting of different stories. It is not explicitly focused on one particular topic or content, and there seems to be no expectations from the participants that it should be so. However, one animal is recurrently talked about, and that is the blue whale. Further, the size of the blue whale is several times oriented to, and it is these instances that are traced in this article. In all there are six instances (corresponding to six excerpts) that have been organised into four groups.

The size of the blue whale as matter-of-fact

In the beginning of the reading activity, the size of the blue whale is explicitly established as a socially shared matter of fact, through the interactionally accomplished convergence of talk, embodied action, and material environment. This occurs two minutes into the activity. Anna has the book about animals in front of her, Ebba sits right next to Anna reading a magazine, whereas Gustaf has not yet arrived at the table. For a little while Anna has been looking at the pictures of a book opening where there are images of different whales (Figure 1).

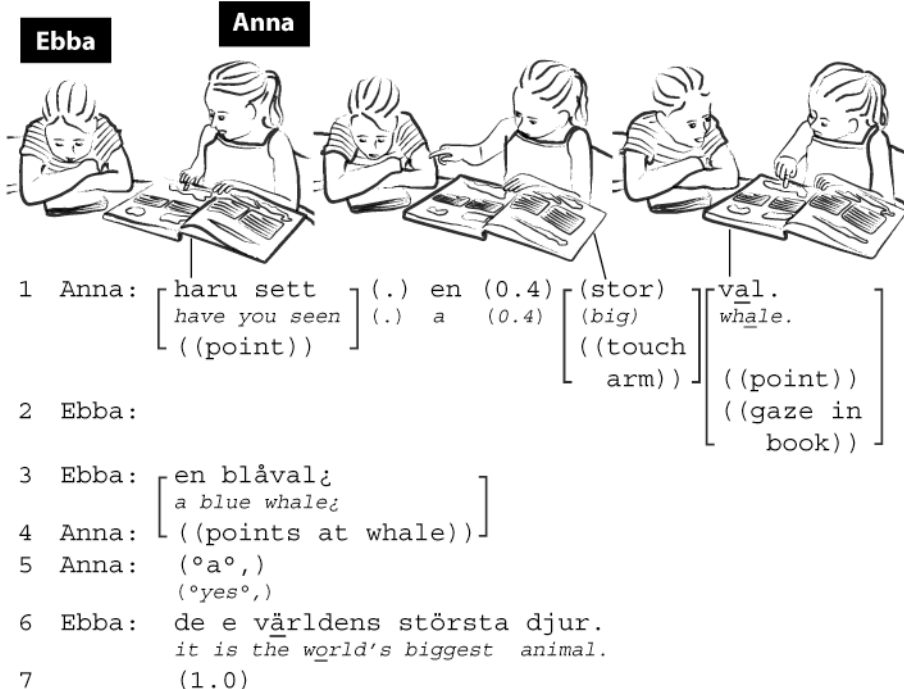
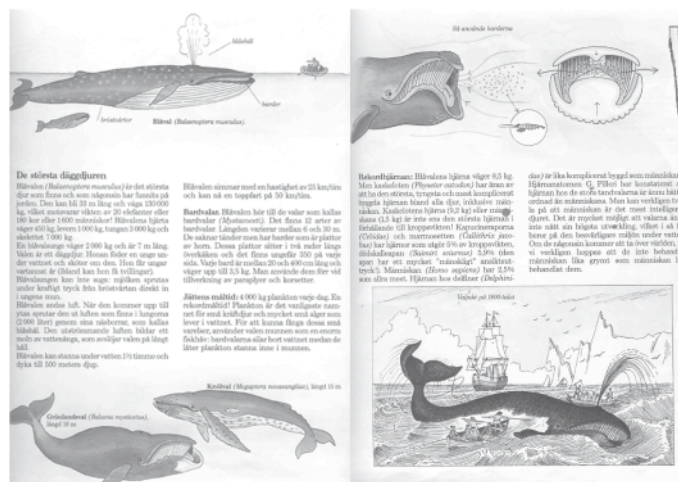


Figure (1): The whale hunt (Tison & Taylor, 1989)



Anna is the one who introduces the topic of the blue whale. Looking at a picture of a whale hunt, she asks Ebba *haru sett* (.) *en* (0.4) (*stor*) *väl*. (have you seen, (.) a (0.4) (big) whale.). Through prefacing the description of the picture with the lexical unit *sett* (seen), Anna calls her hearer's attention to a specific place with an instruction to look there (cf.

Goodwin, 2007). During the initial part of the turn Anna further points at the picture in the lower right corner of the book. At this time however, Ebba is reading a magazine of her own and does not attend to what Anna is pointing at. Taking into account Ebba's lack of attention, Anna's turn is withheld by a micro-pause followed by the word *en* (a) and another pause. During the second pause Anna taps Ebba's arm with her finger. Ebba interrupts her reading and shifts her gaze to the picture that Anna is pointing at, upon which Anna completes her turn.

As Goodwin (i.e. 1980, 1981, 2000b, see also Goodwin & Goodwin, 2004) has demonstrated, not only speakers but also hearers actively engage in the interactive work. Speakers attend to their hearers as active co-participants, and systematically modify their talk as it is emerging so as to take into account what hearers are doing (or not doing). Speakers have systematic ways of determining whether or not someone is positioned as a hearer to their talk. Further, hearers in interaction have, rather than simply listening to what is being said, a range of embodied ways of displaying active participation (Goodwin & Goodwin, 2004). One of the crucial aspects that both speakers and hearers orient to is the direction of gaze. Goodwin (1981) has shown how speakers interrupt their talk when they find that they lack the visible orientation of a hearer, and ensure themselves of hearer's gaze before completing their utterance.

This active work by the speaker to ensure herself of an active hearer can be seen in how Anna through talk and embodied action elicits Ebba's participation in the reading activity. The way Anna's talk in line 1 is produced with hitches and perturbations is finely tuned to her orientation toward her hearer's initial lack of attention. An even clearer example of how she requires Ebba to attend to her actions, is when she taps Ebba's arm. As has been mentioned, Goodwin has demonstrated how relevant hearer gaze is at the speaker. Interestingly, what we find here, where the activity is book reading, is that the material structure that plays a central part in the activity is immediately oriented to by Ebba as the focal point of attention. Anna's talk also directs her gaze, indicating that she is to look at a certain place. Ebba thus directs her gaze to the part of the page to which Anna is pointing (see Melander, 2004a&b).

As we have seen, Anna's turn in line 1 is initiating topical talk on the size of whales, an invitation that Ebba accepts. This is accomplished through her shifting the focus of attention from the magazine that she has in front of her to the book and the picture that Anna is pointing at and talking about. Further, Ebba responds by providing more

information about the whale – that it is a blue whale, something that she later develops in line 6 through stating that *de e världens största djur*. (it is the world's biggest animal.) (cf. Schegloff 2007).

In this first instance of mentioning the size of the blue whale, Ebba and Anna construct the blue whale as being the world's biggest animal. This is done through the finely coordinated use of talk, pointing and the resources provided for by the book opening, and the way these sign systems are sequentially tied and layered. The content of the size of the blue whale is thus located not in the book, not in the talk, nor in the embodied action, but precisely and only in the way these sign systems have been brought to intersect at this moment in time, for and by Anna and Ebba. The understanding of whales and size should further be understood as part and parcel of the public, shared on-going situational accomplishment of the children's everyday life. It is not the expression of something *else*; it is not merely a “display” of inner states or prior knowledge, it is what it is made to be there and then, and has to be understood as such.

Writing about cognition as socially shared, Schegloff (1991:150) argues the importance of a preoccupation with the “*procedural* [italics in original] sense of – and basis for – ‘social sharedness,’ and with talk-in-interaction as a strategic setting in which to study social sharedness.”. This should be understood, Schegloff writes with reference to Garfinkel, to stand in opposition to a notion of common or shared knowledge as more or less equal to the claim that “separate memory drums ha[ve] identical contents” (*ibid.*:152). Instead a procedural sense of common or shared is proposed, where “a set of practices by which actions and stances could be predicated on and displayed as oriented to ‘knowledge held in common’ – knowledge that might thereby be reconfirmed, modified, and expanded” (*ibid.*). So what Schegloff argues in favour of, and what coincides with our interests, is a concern with the processes of sharing and its embeddedness in the context of social situations.

In the subsequent excerpts, five in all, the understanding of blue whales and their size, is elaborated in interaction between Anna, Ebba, and Gustaf. In the course of interaction, the initial matter-of-fact understanding of the whale as the largest animal on earth is developed, in continued interplay between different sign systems. In our analysis, we focus on how the expressed understandings of whales and size are accomplished and change in the interaction of the children.

Specifying the size of the blue whale in relation to other animals

Following the establishment of the whale as the largest animal, the understanding of size is developed by contrasting the whale to other animals, once again relying on the coordinated use of different sign systems. Of particular relevance in this second instance of talk about the blue whale, is the book itself, and the ways in which it provides for topical development.

Continuing from excerpt 1, Anna turns the page from the initial picture she pointed at and starts talking about another image. On the book page that is now open, there are pictures of different animals that are compared according to their sizes, where the blue whale is the biggest and a tiny mouse the smallest (Figure 2). Anna is pointing at the picture of the whale, denominating it as a blue whale. Through the use of the lexical unit *blåval* (blue whale), the topic of the blue whale is thus once more addressed, although in relation to a new picture (see Schegloff, 2004). The topical talk is taken up by Ebba, who in line 4 refers to the blue whale with the indexical *den* (it), elaborating on its size in relation to a couple of elephants that can also be seen in the picture. Thus, we argue that they are talking about the same thing as they did earlier, although within a new contextual configuration (see Goodwin, 2000a).

Excerpt (2): Much bigger than the elephants

- 1 Anna: de e fuskit närom-
it is cheaty when they-
(0.5)
- 2
- 3 Anna: då::r e blå valen.
the::re is the blue whale.
((points))
- 4 Ebba: a me:hehehen(1.9) kolla den e större än=
yes bu:hahahat (1.9) look it is bigger than the=
((points at an elephant.....
- 5 =elef anten.
=eleph ant.
.....
- 6 Anna: titta där ra.
look there then.
((points at hippos))
- 7 (1.4)
- 8 Ebba: kolla dom e myckre större än elefanterna.=
look they are much bigger than the elephants.=
((points over elephants)) ((points over whale))
- 9 =de ser man ju. (0.4) elefanterna:,
=you can see that. (0.4) the elephants:,
((draws finger over whale toward elephants))
((points at elephants))

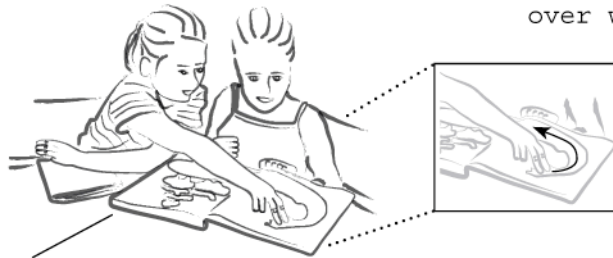
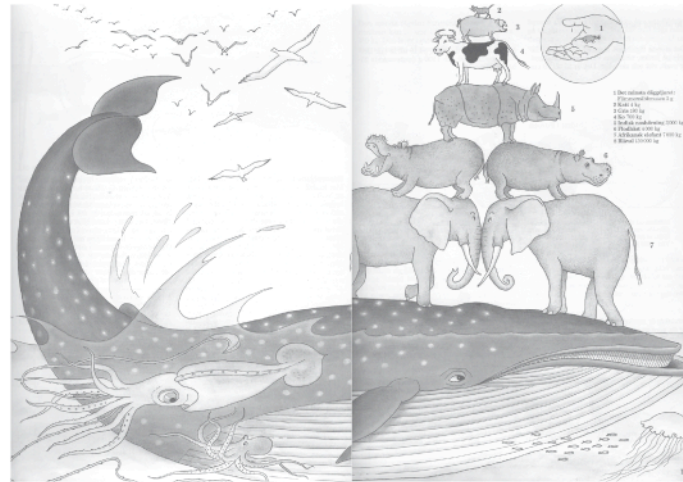


Figure (2): The size of the blue whale (Tison & Taylor, 1989)



In the book reading activity, the nomination of topics is closely related to on the one hand the design of each book page, and on the other hand the turning of pages. Each book opening contains both text and pictures that afford and constrain interaction, and can be seen as a semiotic resource used and elaborated upon by the children. The design of this specific semiotic structure – the book – provides the children with an activity framework in relation to which they orient their actions (cf. Goodwin 2000a). These actions are related to the way that they are positioned vis-à-vis the book and each other; Anna sitting with the book in front of her, with Ebba sitting beside her with more limited access to the book.

Anna can easily attend to the different parts of the book opening. She is also in control of the book, in the sense that she can decide when to turn the pages. Being the one who decides when to turn a page is not only about the turning of a page, but perhaps more importantly about what is going to happen with the story that is currently being told. The turning of a book page can provoke the continuation of the story, but it can also mark the end of one story and the beginning of another one (and thus a shift in topic). By changing book opening, the semiotic structure affording one array of possible interpretations or topics to be talked about, is also changed. Hence, the participation framework is changed, and each book opening provides a new framework both constraining and affording interaction.

Just prior to this excerpt, Ebba and Anna have been talking about how all animals have the right to live. Anna has initiated the turn *de e fuskitt när om-* (it is cheaty when they-), as she simultaneously turns the page of the book. Upon seeing the picture of the blue whale

(Figure 2), she cuts off her current turn and instead starts up a new one, a turn that is initiating a new topic and that is thus placing the ongoing interaction on a different trajectory.

Schegloff (1990) has pointed out that one of the problems with the analysis of topical talk, is that topic shifts are seldom clearly discernible, as a common practice is topic shading where participants gradually shift the topical thrust (Sacks & Schegloff, 1973, see also Jefferson, 1984). Button and Casey (1985:3) write that a “systematic feature of topic organisation is that topics flow from one to another,” which means that “a distinct beginning of a topic may not be readily apparent.” However in certain environments there are arguably disjunctive topic shifts. One such environment that has been identified by Button and Casey (1985), is when participants are doing news enquiries or news announcements. In the reading activity the topic shifts are in a similar way marked as the children orient to the pictures of the book and in so doing quite disjunctively change the topic.

Anna initiates the new topic by saying in line 3 *dä::r e blåvalen*. (the::re is the blue whale.) as she simultaneously points at the picture of the blue whale that is so big that it has to bend its tail in order to fit on the book page. Ebba points at one of the elephants placed on top of the blue whale, saying that it is bigger than the elephant. She thus accepts the invitation to topic talk by Anna, and further develops it through introducing a contrast in size between the elephants and the blue whale.

Anna picks up on the activity introduced by Ebba by pointing at the animals on top of the elephants, that is the hippopotamuses. However, instead of pointing further up and commenting on those animals, Ebba continues her reflection on the size of the blue whale in comparison to the elephants. She repeats what she earlier said, upgrading the description of the difference in size between the animals, saying *kolla dom e myck ↑e större än elefanterna*. (look they are m[↑]uch bigger than the elephants.). When saying this she first points over the two elephants, then lets her pointing finger sweep over the whole length of the blue whale and then once more over the elephants.

This sweeping pointing gesture reinforces the shape of the picture and strengthens the impression of the differences in size between the animals. To point over the elephants requires a quite small movement of the hand, whereas she has to lean forward and move her whole arm in order to cover the blue whale. This is a pointing gesture that could be called, following Goodwin (2003a), a pointing carrying an iconic component. It is a gesture that

traces the shape of what is being pointed at, and thus superimposes an iconic display on a deictic point within the performance of a single gesture. The moving finger and the target of the point are brought into a dynamic relationship in which each is used to understand the other. The gesture elaborates on the picture, providing more information about what is being pointed at than is laid out in the picture alone. Thus, the pointing and the way it is carried out explicitly address the topical aspect of size. The shape of the blue whale is embodied in the pointing, and its large size is invoked as the shape of the whale is being traced. Further, the pointing gesture and the verbal turn elaborate upon each other, together giving a more vivid impression of what it is that Ebba is referring to than one of the sign systems alone can provide.

We can here note that Ebba is at this time using the picture as evidence for the conclusion that the blue whale is bigger than the elephant (the *de ser man ju*. (you can see that.) in line 9), it is something that can be *seen* in the representation. That you can see it in the representation is taken to corroborate the fact that this same difference be present in “real life.” This can be compared to how Anna later states that the blue whale is in fact bigger than the book (see Excerpt 6).

This second excerpt has demonstrated the evolving understanding of the size of the blue whale, and how it has been accomplished through the coordinated and converging use of the book and its semiotic properties, pointing, and talk. In the following extracts, another participant, Gustaf, takes part in the continued development of “size.” In addition to aspects already discussed, it is of particular interest in this excerpt to find how knowledge of the world as mediated by the picture book explicitly is relied upon for continuing the development of the size of the whales, in excerpts 3 and 4 as comparisons of the size of the whale in relation to other animals, and in excerpt 5 as comparisons to other material objects.

Excerpt (3): The elephants are tiny



1 Ebba: kolla. (.) blåvalen=
look. (.) [the blue whale=
((points at blue whale))]



2 =å [värsta elefanterna] e pyttesmå.
=and ["the worst" elephants] are tiny.
((points over elephants))

3 Gustaf: [ee [ee [ee=
ee [ee [ee=
((draws finger over hippopotamuses))
L ((draws finger over rhinoceros))
L ((draws finger over cow and pig))]

4 =me k-a-
=but the c-a-
((stops and holds finger on cat))

5 Ebba: [<ka tten> e ingenting.
[<the c at> is nothing.
((points at cat))]

6 (0.7)

7 Ebba: ↑katten e värsta myran.
the ↑cat is "the worst" ant.

8 Gustaf: musen. tänk om de skulle va=
the mouse. what if there was=
((points at mouse.....

9 =en mus på då.
=a mouse on (then).
.....))

10 (1.5)

As Gustaf sits down, Ebba introduces him to what they have been talking about: that in comparison to the blue whale, the elephants are tiny. In so doing, she is turning the comparison around. Instead of focusing the blue whale as being much bigger, the elephants are highlighted as being much smaller.

We have here another example of how talk and embodied actions elaborate on each other and indeed how intertwined with each other that they can be. How this is being done is captured in the concept “environmentally coupled gestures” (Goodwin, 2007). Ebba’s talk

– *kolla. (.) blåvalen å värsta elefanterna e pyttesmå.* (look. (.) the blue whale and “the worst”¹ elephants are tiny.) – is taken literally saying that both the blue whale and the elephants are tiny. However, Ebba’s turn does not consist of talk alone. Taking into account the embodied actions that Ebba is simultaneously producing, we can see how she, when pronouncing the lexical blue whale, is pointing at the blue whale in the picture. She then points at the elephants as she talks about the elephants. The talk in itself is simply not enough for Anna and Gustaf to properly grasp what Ebba’s utterance is about. The comparison in size between the blue whale and the elephants is enacted and made visible in the performed gestures in relation to the pictures in the book and not primarily in the talk. Further, the construction of the utterance relies on the design of the book page, where the animals are explicitly compared in terms of size. It thus presupposes that it is indeed size that is being compared, and that this is something that can be seen in how the book page is organised. Consequently, the utterance further presupposes that the participants are all attending to a specific place on the book page, something that is framed by the lexical *kolla* (look) in the initial part of the verbal turn. Ebba’s turn is thus built through the simultaneous use of language, gesture, and the structure of the book page. Different sign systems are brought together and mutually elaborate each other, creating a whole that is both different from and greater than any of its constituent parts.

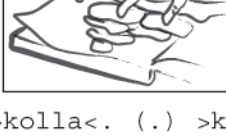



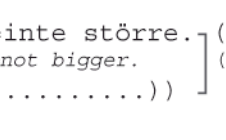
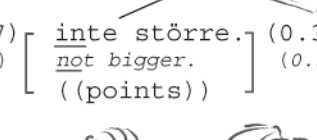
Gustaf throws himself into the activity and starts designating the rows of animals by pointing over the hippopotamuses, the rhinoceros, the cow and the pig, arriving at the cat. At this stage, Ebba interrupts him and says <*katten*> *e ingenting*. (<the cat> is nothing.), followed by ↑*katten e värsta myran*. (↑the cat is “the worst” ant.). There is no ant in the picture, so Ebba could here be drawing on her experience of ants indeed being very small, and where the lexical unit *ant* is doing the job of an adjective, as an alternative to saying that the cat is small. Further, in the “real world,” the cat is big in comparison to an ant, so the everyday experience of the relation in size between the cat and the ant is a parallel to the difference in size between the blue whale and the cat on the book page.

The topic is now temporarily abandoned, as Anna as part of the introduction of Gustaf to the activity, turns the pages to the beginning of the book. After a short digression (lasting

¹ The expression “värsta” literally means “the worst.” However, in vernacular Swedish, the term is also used as an intensifier, marking the extremeness of some property of a noun. This latter use is the one in play in the reading activity. In other words, Ebba’s description in line 2 of the elephants as “the worst,” is to be understood as underlining the absurdity of the “tinyness” of an animal that is usually conceptualised as very big. Similarly, the later description in line 7 of the cat as “the worst ant” underlines how the cat is really small in comparison to the other animals in the picture.

Gustaf now says >*kolla*<. (.) >*kolla*<. *va::l- elefanter e inte störr*. (>look<. (.) >look<. *wha::l- elephants are not bigger*.). As he says this, and then repeats *inte störr*. (not bigger.), he works himself up through the pyramid of animals with a pointing gesture that captures

Excerpt (4): Absolutely not bigger

	Ebba	Anna	Gustaf
	 		
1	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Gustaf: >kolla<. (.) >kolla<. >look<. (.) >look<.</p> </div> <div style="width: 50%; border-left: 1px solid black; padding-left: 10px;"> <p>va::1- elefanter e= wha::1- elephants are= ((points at elephants..</p> </div> </div>		
	 		
2	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>=inte störrer. (0.7) =not bigger. (0.7) ))]</p> </div> <div style="width: 50%; border-left: 1px solid black; padding-left: 10px;"> <p><u>inte</u> störrer. (0.3)= <u>not</u> bigger. (0.3)= ((points))]</p> </div> </div>		
	 		
3	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>=<u>inte</u> störrer. (0.3) =<u>not</u> bigger. (0.3) [((points))]</p> </div> <div style="width: 50%; border-left: 1px solid black; padding-left: 10px;"> <p><u>inte</u> störrer. [(0.3) <u>not</u> bigger. [(0.3) [((points))]</p> </div> </div>		
4	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>ap- apsolu- ap- apsolu-</p> </div> <div style="width: 50%; border-left: 1px solid black; padding-left: 10px;"> <p>da:ɔ huh (the:n)ɔ huh ((points at cow))]</p> </div> </div>		
5	<p>Anna: å kossan [da:ɔ huh and the cow (the:n)ɔ huh ((points at cow))]</p>		
6	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Gustaf: fapsoluhutf inte stö- fapsoluhutelyf not bi- [((points at cat))]</p> </div> <div style="width: 50%; border-left: 1px solid black; padding-left: 10px;"> <p>apsolut inte störrer. [apsolutely not bigger. [((points at mouse))]</p> </div> </div>		
7	<p>(1.0)</p>		

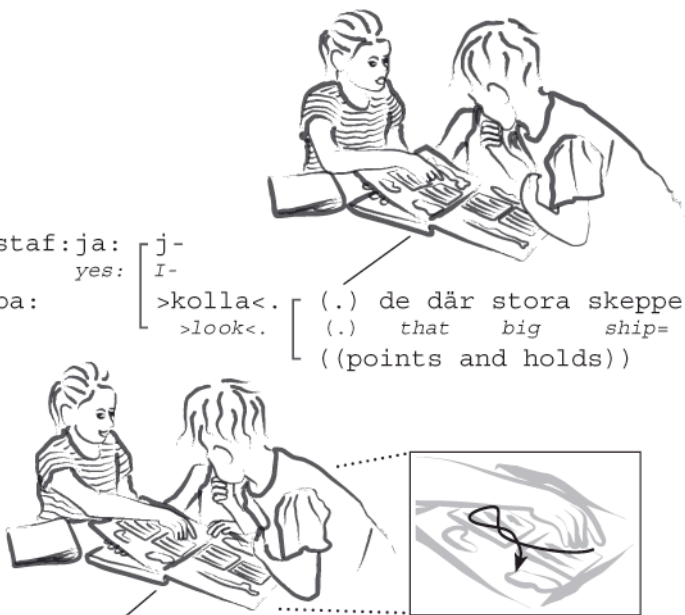
the differences in size between the animals. Over the picture of the elephants, he holds his hand with his fingers spread, embracing the two elephants. Reaching the top of the pyramid, his thumb and middle finger form a pointed shape, simultaneously highlighting and emphasising the smallness of the animal. This embodied enactment of the differences in size is tied to the picture, and in other words to what can be seen on the book page.

Up until now we have seen how, starting in the first excerpt when Anna and Ebba for the first time talked about the blue whale, Ebba stated that the blue whale is the world's biggest animal. The girls then once more oriented to the topic of the blue whale's size, this time together with Gustaf, comparing the blue whale to other animals on the book page, thereby for example specifying that the blue whale is much bigger than the elephants, and that the elephants are indeed tiny in comparison to the blue whale.

Specifying the size of the blue whale in relation to a material object

The children continue reading, talking about the different pictures as they are browsing through the book. The topic of the blue whale is then once more talked into being, as Anna turns the pages back to a picture of a whale hunt that the girls have earlier talked about (see Figure 1). The (disjunctive) topic shift is thus done in relation to a specific picture that they have earlier looked at and talked about. That it is the same topic that they are addressing can be tied to the use of specific lexical units and to their orientation to a picture that they have earlier looked at and are now looking at again. Further, it is arguably the same topic for the participants as they are engaged in telling Gustaf what they have been doing before he came, thus explicitly orienting to doing the same topic as before.

Excerpt (5): That big ship is nothing



1 Gustaf: ja: [j-
yes: I-

2 Ebba: [>kolla<. [(.) de där stora skeppe=
>look<. [(.) that big ship=
((points and holds))]]

3 [=de e liksom <ingen>ting> för hela valen.
=it is like <no>thing> for the whole whale.
((sweeping point))]

4 (1.2)


Embedded in a discussion about the whale hunt and the children's concern with all animals' right to live, the size of the blue whale is briefly mentioned. Ebba comments on the size of the blue whale: *de där stora skeppe de e liksom <ingenting> för hela valen*. (that big ship it is like <nothing> for the whole whale.). As in the first excerpt, the size of the whale is compared to something on the book page. It is highlighted by Ebba's sweeping pointing gesture over the whale and the hunting people in a boat and an initial >kolla.< (>look.<), drawing attention to the picture. This time, the comparison does not concern other animals, but the size of the ship – a material object. The “big” ship is construed as “nothing” for the whale. This elaborates on the size of the whale, but there is no further discussion at this time.

Tying the size of the blue whale to things in the environment

The children have, up until now, oriented to the size of the blue whale in relation to specific pictures in the book. Their discussions have been tied to images, where it is in relation to what they (and we) can in fact see in the pictures that the size of the blue whale

has been elaborated. Since the prior mention of the size of the blue whales 5 minutes and 20 seconds have gone by, which is a considerably longer time lapse than between the other instances. This last time that the size of the blue whale is oriented to, it is done in a different way.

Excerpt (6): What if it's bigger than the sea

- 1 (1.5)
- 2 Ebba: kolla här e [<masser av sort->=
look here are [<lots of kind->=
((points))]
- 3 =dinosauriesorter.
=kinds of dinosaurs.
- 4 Anna: fast e- .hh en riktia måvå- (.) må-=
but e- .hh the real muwh- (.) mu-=
5 =.hh blåvalen e=
=.hh blue whale is=
- 
- 6 =[större än den här boken.
=bigger than this book.
((pats book opening with whole hand))
L((gaze at Ebba))]
- 7 Ebba: [<MY:CKE:> >den e (ju) < större:
[<MU:CH:> >it is< bigger:
((gaze at Anna))]
- 8 Anna: än oss. (den e stö-)
than us. (it is bi-)
- 9 Ebba: [den e kanske lika stor som <skolan>.
it is maybe as big as <the school>.
- 
- 10 Anna: den [kanske e lika stor som <skol↑gården.>
it [maybe is as big as <the school ↑yard.>
((moves her arm in a circle))]
- 11 Ebba: j̥a:a:.
ye:es:.
- 12 (1.3)
- 13 Anna: tänk om den e större än ↑have. hihhihi
what if it is bigger than the ↑sea. hihhihi
- 14 Ebba: me(he)n knä(hh)ppgö(hh)k.
bu(hu)t stu(hh)pid cu(hh)ckoo.

During the time that has passed since they last talked about the size of the blue whale, Ebba has put away the magazine that she earlier had in front of her. She is now fully engaged in the collaborative reading, something that is displayed by her body position. She is leaning into the book and the other children, thus marking a higher degree of participation in the activity.

The page that is now open in front of them has got birds on it. Initially, Ebba orients to the pictures, claiming that there are dinosaurs on it. However, Anna is not responding to this topic, and instead in line 4 returns to the topic of the blue whale and its size; *fast e- .hh en riktia måvå- (.) må- .hh blåvalen e störrre än den här boken.* (but i- .hh the real muwu- (.) mu- .hh blue whale is bigger than this book.). This statement is produced with lots of interruptions and audible inbreaths and Anna's voice, as well as her gestures, are eager. She pats her hand on the book, leaning forward into the book. At first she is looking at the book opening intently to then turn her head and gaze towards Ebba, explicitly inviting Ebba to participate in the activity (and in other words not Gustaf as Ebba is seated on her right side and Gustaf on her left). Ebba accepts the topic talk, and she agrees with and upgrades Anna's utterance through the rather emphasised <MY:CKE:> >den e (ju) störrre:< (<MU:CH:> >it is< bigger:), something that Anna continues and brings to completion by saying *än oss.* (than us.).

As we have seen, Anna begins by saying that the blue whale is bigger than the book. Through studying mothers reading to their (very young) children, Snow and Ninio (1986) have demonstrated that the children are initiated to what the authors call a "contract of literacy." Among other things, this contract involves an understanding of how to interpret the pictures in books; that they are not things or objects in themselves but representations of these same objects. In other words pictures should be interpreted symbolically. It is precisely this kind of understanding that Anna is displaying when she says that the blue whale is bigger than the book they are reading, a statement that might at the face of it seem self-evident (cf. earlier discussion in relation to Ebba's turn *de ser man ju.* (you can see that.) in Excerpt 2).

They continue by Ebba first suggesting that the blue whale might be as big as the whole school (line 9), whereby Anna says that it might be as big as the schoolyard (which implies that it is indeed bigger than the school building). Here we can remark the slight reservations that both girls use by the lexical *kanske* (maybe). Ebba then confirms Anna's utterance that the whale is as big as the school yard with a *ja.ä.* (ye:es:). After a pause Anna further

continues elaborating on the size of the blue whale by saying in line 13 *tänk om den e större än ↑have*. (what if it is bigger than the ↑sea.), something that is concluded by a giggle and is handled by the participants as a joke. It should be noted that through situating the blue whale in the sea, Anna displays that she knows where blue whales live and the “ridiculousness” of her proposal, of course, comes from the notion of the blue whale being bigger than its natural habitat. Ebba expresses this in line 14, when she says *men knäppgök*. (but stupid cuckoo.), which is further produced with a voice filled with laughter.

In this last excerpt, the children turn by turn build a shared understanding of how big a blue whale is. That it is bigger than the book seems self-evident. But it is also probably bigger than both the school and the schoolyard. That it be bigger than the sea is treated as a joke. Through this they determine the borders of how small and how big respectively a whale is – something which begun with a picture in a picture book, was extended and developed in interaction and now has been brought to its end.

Some concluding remarks

What has been traced in this text is how the children return to the topic of the size of the blue whale, discussing and developing the theme through a book reading sequence. The first time the topic is oriented to it is in a matter-of-fact manner, Ebba stating that the blue whale is the world’s biggest animal.

The second time that the size of the blue whale is oriented to it is in relation to a picture that invites to a comparison of size. That the blue whale is the world’s biggest animal is here developed and specified, where the blue whale is found to be much bigger than all other animals on the picture, something that includes for example elephants and hippopotamuses. This difference is not only talked into being, but also enacted in gestures performed in relation to the picture on the book opening, where pointing over the blue whale requires a much larger movement than pointing over the elephants. Thus, in this instance, the discussion is tied to the picture in the book, taking the picture as basis for claims of differences in size between the animals.

The third time the size of the blue whale is a topic it is also in relation to a specific picture – the picture of a whale hunt. Here, the blue whale is compared, not with other animals, but with a ship, where the “big” ship is construed as “nothing” for the whale. This further elaborates on the size of the blue whale, this time in relation to a material object.

The fourth and last time that the size of the blue whale is oriented to, the children are tying the size of the blue whale to material things in the environment. Up until this instance they have been discussing the matter of size in relation to what they could in fact see in the pictures. What happens now is that they instead elaborate the topic by first of all stating that the real blue whale is bigger than the book, continuing by escalating the comparisons first with the blue whale being bigger than themselves, bigger than the school and then suggesting that it might even be as big as the school yard. Finally, having reached what they orient to as being the limits of how big the blue whale can be, it is jokingly established that it cannot be bigger than the sea.

It clearly is the case that the blue whale sequence is about learning. From a general point of view this claim is not surprising. A consequence of the new conceptions of learning is, as Lave and Wenger (1991) argue, that learning is “an integral part of all social practice.” This analysis, however, is not general but specific; it does not argue learning in principle, but empirically demonstrates how the children collaboratively construct a perception of the size of the blue whale and how this topic evolves throughout the activity.

Both the topic of the size of the blue whale and the gradual changes in content occurring with respect to the whale’s size have to be understood as located *in interaction*, where different sign systems are brought together and elaborate upon each other. The analysis demonstrates that the changes taking place cannot reasonably be understood as a matter of the expression of changes in individual mental models. Neither are the changes a matter of appropriating a “correct” understanding of size from an outside authoritative source, such as the book. Instead, the analysis empirically substantiates Lave and Wenger’s (1991) argument for the need of dissolving dichotomies; for the need of understanding learning, thinking and knowing as relational.

On the basis of the analytic work, the study also facilitates a slight re-conceptualisation of the understandings of participation within CA research on learning, in relation to how issues of topic and content, which are essential aspects of studies of learning, should be understood in relation to other aspects of interaction. The results indeed cast some doubt on any categorical distinction between focus on form and focus on communicative content. As Mondada and Pekarek (2004:513) have demonstrated within a L2 classroom, formal tasks are often organized as interactional exchanges and further that a focus on form “may imply a reconceptualization of content that would not otherwise take place”. Linguistic competencies interact with other types of knowledge and skill. The authors further write,

that language use in social contexts always involves the deployment of linguistic and discourse capacities as well as modes of interpreting and thinking about communicative content and ways of acting adequately within socioculturally relevant interaction, patterns, and communicative cultures. The linguistic aspect of a situation is inseparable from its socio-interactional and contextual dimensions (*ibid.*).

The separation between a how and what is still relevant from a language learning perspective. How is it so for the situation that has been analysed here? It is not as simple as that a content has been isolated, and that a variation in interaction patterns has been studied. Instead, the form and the content are inextricably intertwined and mutually constitutive.

The aviation study: Recoveries from unusual attitudes

The activity

The activity that is in focus is a flight manoeuvre, which is called recovery from unusual attitudes. The participants are a student and her teacher, and the analysis focuses on how they co-construct the unusual attitudes in the classroom and in the airplane. The manoeuvre is both talked about and actually performed.

An unusual attitude is a position of the airplane that is recognised as not normal and something that requires that you take action to recover from. The unusualness of the attitude has to do with the positioning of the nose and wings in relation to the horizon in combination with speed (Figure 1). The horizon is an important point of reference, in relation to which many of the actions are organized.

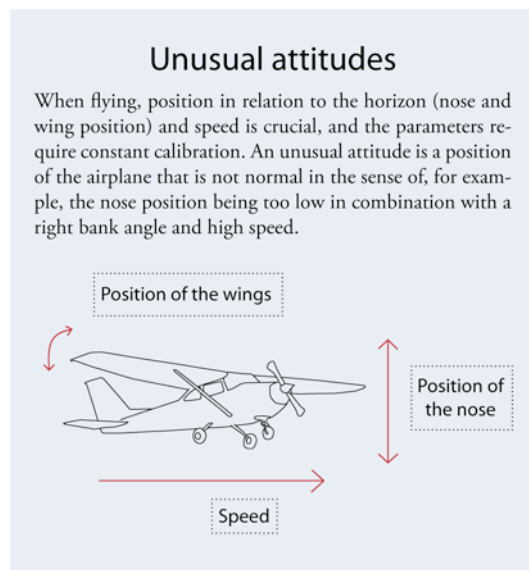


Figure 1

In the briefing session, the teacher and the student go through different documents and talk about the content of the flight lesson. The content of each flight lesson is regulated and presented in a printed document that is read and used during the lesson. The pre-flight briefing session is also an opportunity for the student to ask questions and for the teacher to

check the student's understanding of the content or to make theoretical reviews. In the briefing session that is analysed in this paper, the question of unusual attitudes and how to recover from them is raised by the student and is followed by a comparatively long discussion. In general, the briefing sessions last approximately 10 minutes.

Later, in the airplane, the teacher flies them into an unusual attitude while the student has her eyes closed. The teacher then says "your controls" which is a standardised way of transferring responsibility between the pilots, and which is a sign that it is now the student that has to take over the control of the airplane. The student has to find out what kind of unusual attitude it is and what to do in order to recover from it. When doing the recovery there are three aspects, in line with what was said above, that need to be taken into account: nose position, wing position, and speed. However, what is required to be done and in what order depends on the situation. It is this ability to understand the specificities of the situation that is captured by the notion situation awareness.

Up until the time of the recording, the student had had her training in an older type of airplane with mechanical instruments. Prior to the three consecutive flight lessons that are investigated in this chapter, the student has only once flown a highly computerized airplane, referred to as a glass cockpit. The instrument panel is dominated by two computer displays where information from many different instruments is brought together in one display, thus making it into a complex visual field.

Further, the greater part of this student's experience has been flying with *visual flight reference* (VFR). This means that she is used to flying relying on her own visual perception of the world outside the airplane, and how the airplane moves in relation to that framework. During this lesson however, she is wearing a hood so as not to be able to look outside the airplane for reference points, but instead to be forced to focus on the instruments. In other words, the resources that the student has for performing her actions are the instruments and displays inside the airplane. Further, she has the resource of her own body and how she physically experiences the movements of the airplane. Flying a small airplane is indeed a very physical experience and the unusual attitudes are no exception. Flying in and out of the attitudes one moment presses the body down into the seat to the next moment make you feel as if you are weightless. A crucial feature of the flight lessons is that they are for real. Unlike in the ordinary classroom, every action can be consequential beyond the pedagogical goals of the lesson and could literally be a question of life and death.

In the debriefing session the participants talk about the flight lesson and what has happened during it. The teacher evaluates the student's performance, and grades her efforts. The duality of the flight lessons, as on the one hand an occasion for instruction and learning and on the other an examination, is here explicit. Sometimes, as will happen in the flight lesson investigated in this text, the student's performance is judged as unsatisfactory and she does not pass. This results in a special report about the student's failure and the student has to do the same lesson over again.

Analysis

We will now follow the student through the three consecutive flight lessons, focusing on the manoeuvre recovery from unusual attitudes and how these are constituted in the classroom and in the airplane. The analysis is done and presented following the chronological order in which the situation unfolds. This is important in order to capture and analyse how understanding develops, and how there is both continuity and change.

In the first and the third flight lesson the teacher is the same, whereas the teacher in the second lesson is a different one. The first and the second lessons are in fact the same, as the student does not pass the first time but has to do the same lesson over again. In the first (and second) lesson, the overall goal is to put the student under a heavy workload where she has to demonstrate that she can find and interpret the instruments. The third flight lesson is emergency training, and has to do with the loss of computer displays, something that will require the student to look at unusual places for information about the state of the airplane.

First flight lesson

Pre-flight briefing session: Discursive embodiments of speed, nose position, and wing position

In the briefing session the student was asking questions about the unusual attitudes, and what they involve. The teacher first described what the organisation of the exercise was, that is, that the student will close her eyes while the teacher flies them into the attitude from which the student will recover the airplane. The teacher then begins asking the student what she would do if they – when she opens her eyes and takes over the controls – have a high nose and are stalling. When we enter into the activity the teacher is demonstrating an unusual attitude that has a *väldigt låg nos*. [very low nose.].

Excerpt 1: A very low nose

1 Teacher om du: tittar upp å så har du
if you: look up and then you have

Gesture describing
position of airplane

2 väldigt låg nos.
a very low nose.

3 istället. va gör du då;
instead. what do you do then;

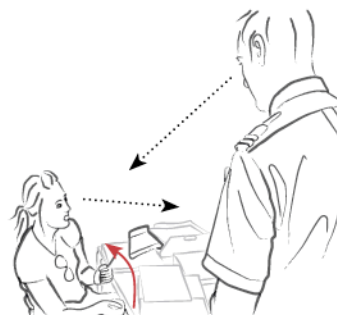
4 Student [(1.6) e:: (1.5)]
[(1.6) uh:: (1.5)]
[((lowers gaze))]

Gesture describing
required actions

5 ja tar upp ↑nosen,
I take up ↑the nose,

6 [(.)]
[((gaze at teacher))]

7 å gas,=
and power,=



When demonstrating the low nose positions, the teacher holds his hand and arm close to and in front of his body. The fingertips correspond to the nose of the airplane, and the hand and arm are held with the fingers pointing down. The hand is not tilted in any way, but held straight, palm facing down. The import of this is that the only aspect of the unusual attitude that is highlighted is the nose position, whereas wing position and speed are neither in embodied actions nor speech made relevant. We could also notice, that the formulation “very low nose” is an extreme case formulation, saying that the nose is not only low, but indeed very low, something which is going to turn out to be of importance.

The teacher asks the student *om du: tittar upp å så har du väldigt låg nos. istället. va gör du då;* [if you: look up and then you have a very low nose. instead. what do you do then;]. as the teacher has asked the question *va gör du då;*, the student during the 1,6 second silence gradually shifts gaze, from looking at the teacher to looking down at the table. The silence is

followed by a prolonged sound *e::* [uh::] and then there is another 1.5 second pause before the student answers *ja tar upp ↑nosen*, [I take up the ↑nose,].

The turn is produced rather softly, where the lexical “nose” is said with a flat and high-pitched voice. It is not until she has completed the first TCU that she looks up at the teacher, and then, upon not (immediately) receiving response from the teacher, continues by adding an increment *å gas*, [and power,], during which she is gazing at the teacher. The answer is try-marked through the way it is produced. The intonation curve of the turn rises on *↑nosen* [the ↑nose], staying up high. There is a short silence, and then she adds *å gas*. [and power.]. This is first dropping down low over the *å* [and], to then slightly rise over *gas* [power]. *gas* [power] is further produced in a rather flat way, which renders the turn a flair of uncertainty, and to what can be argued as weak epistemic claims on behalf of the student.

When setting up the unusual attitude, the teacher has not indicated the situation with regards to speed, but the student is, however try-marked the answer is, able to recognise that an unusual attitude involves not only nose position but also other aspects. However, she is not indicating whether to add or reduce speed.

The student responds to the question through both talk and embodied action. She produces a verbal turn describing what she would do, that is *ja tar upp ↑nosen*, [I take up the ↑nose,]. She simultaneously performs the required action holding the imagined controls with her hands and pulling towards her. When performing these gestures of enactment, the student is importing her experiences from the airplane into the classroom. LeBaron and Streeck (2000:119) argue that gestures originate in the “tactile contact that mindful human bodies have with the physical world”. Without this relation to the world of things, the movement of the hand could not be seen as action. They write that gestures originate in the hands-on manipulation of the material world, and that

the abstracted gesture retains an indexical link to it, which can be used in both directions – the gesture presupposes the material world for its intelligibility, but can also and by the same token evoke it.” (LeBaron & Streeck, 2000:124)

When the student gestures the required movement – the action – to take up the nose of the airplane, she is making visible an object and an action known to both the teacher and herself. It is this shared experience that enables the teacher to see what the gesture indexes

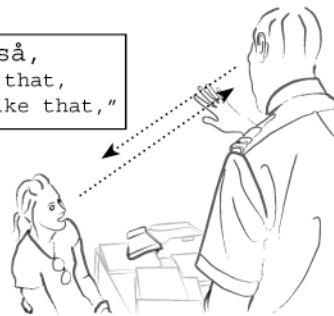
(see LeBaron & Streeck, 2000:135). The gestures are evoking a world of experience held in common.

Excerpt 2: Do you just take it up

- 1 Teacher =tar du upp
=take you up
"do you just take

- 2

den direkt bara, (.) så,
it directly only, (.) like that,
it up straight away, (.) like that,"



- 3 Student nej ja måste ju kolla farten först.
no I have to check the speed first.

- 4 Teacher farten måste du kolla ja precis
the speed you have to check yes exactly

- 5 Student

[()]

 men om de e väldigt hög fart så-
but if it is a very high speed then-

- 6 Teacher m (.) precis.=>de e viktigt att du
m (.) exactly.=>it is important that you

- 7 tar upp< nosen. (.) fort.
take up< the nose. (.) quickly.

- 8 men om- säg att vi ligger i ett
but if- say that we are in a

- 9 [(.)
((takes model from wall))]

- 10 [sånt här läge.
position like this.
((demonstrates with model))]

The teacher ignores the student's added *å gas*, [and power,], and asks *tar du upp den direkt bara, (.) så*, [do you just take it up straight away, (.) like that,]. As he produces the indexical *den* [it], he gestures demonstrating the trajectory of a climbing airplane. In this gesture the bank angle of the wings is actually present, as the hand is held slightly tilted to the left. However, the gesture in itself is not made the focus of attention through for example gazing at it by neither teacher nor student. Instead, the student orients to the

question as being about in what order to do things, and she answers *nej ja måste ju kolla farten först*. [no I have to check the speed first.]. The teacher treats her answer as correct in principle, or in other words that it is correct that she has to check the speed, but he then continues his turn – as it turns out in overlap with the student. The student has heard the first part of the turn and starts talking at a turn transition relevance place, which however the teacher continues beyond. She initiates an elaboration on what she would do about the speed, but cuts off. Very possibly she is orienting to something that the teacher is doing, as for example the content of what he is saying in overlap with her (which is not hearable on the video but might very well be heard by the student) or simply the fact that there is overlapping talk, something which is regularly minimised by participants-in-interaction (see Schegloff, 2000). Further, the teacher is now shifting the position of his body, and starts to move around.

Introducing a model airplane


Once again the teacher confirms that she is right about the importance of taking up the nose quickly. In so doing, he is putting within parentheses, or even ignoring, the whole section about the speed, as his turn is tying back to the position of the nose. Further, the teacher picks up a wooden model of an airplane that is hanging on the wall, thus bringing in a new semiotic resource. Consequently, a new contextual configuration (Goodwin, 2000, 2007) is brought into play:

The set of different kinds of phenomena that participants are treating as relevant to the organization of the action of the moment can be referred to as a contextual configuration. As circumstances change contextual configurations are modified. (Goodwin, 2007:60).


Excerpt 3: Level the wings

- 1 Teacher *säg att vi ligger i ett*
 say that we are in a
- 2 [(.)
 ((takes model from wall))]
- 3

sånt här läge.
position like this.


- 4 Student mm
- 5 Teacher *va skulle du göra först då.*
 what would you do first then.
- 6 Student

skeva upp så.
level like this.


- 7 Teacher *precis. skeva upp först (ja).*
 exactly. level it first (yes).
- 8 Student a.
 yes.

The teacher now describes a situation – *säg att vi ligger i ett (.) sånt här läge*. [say that we are in a (.) position like this.]. Upon completion of his turn, he places the model in front of him, positioning it so as to be seen by both him and the student. Up until now the greater part of the gestures have been performed without the participants specifically orienting to or highlighting the gestures. The student gazes at the teacher when he is doing the gestures, but it seems that she is perceiving him as a whole, and not the gestures as a specific salient feature that needs to be attended to in its details. And the teacher has not highlighted his gestures through for example looking at them or placing them so as to be focused upon. However, when the model is introduced, it is immediately made the centre of attention where both the student and the teacher are fully orienting to the model through gaze and body posture. The artefact makes relevant that both student and teacher look at the airplane, thus highlighting what is being done with the model. This makes the model different from the enacted actions and trajectories or movements of the airplane that were demonstrated earlier. It provides the participants with an activity framework in relation to which they orient their actions (cf. Goodwin, 2000a).

The construction of the verbal turn highlights that something is to be looked at, in the sense that the description “in a (.) position like this” is indexical, tying the utterance to an environment – embodied and/or material. The way that the model, talk, and gestures come together is captured in the notion of *environmentally coupled gestures* (Goodwin, 2007:55). The teacher’s question does not consist of talk alone. The use of the deictic term *sånt här* [like this] presupposes that the student is looking at the model, and further that she is recognising something special about the model – that it is displaying a specific aspect of an unusual attitude. Thus without the model, the verbal turn could not be properly grasped. The unusual attitude, referred to in language as *sånt här* [like this], is tied to the material world by the teacher as he manipulates the model. Further, the model is tied to even larger material structures in the environment, i.e. the airplane that they will later be flying. In Goodwin’s words, different kinds of semiotic practices (language, gesture, and the model) in different media mutually elaborate each other “to create a whole that is different from, and greater than, any of its constituent parts” (*ibid.*).

The model is making the bank angle of the wings visible, something that the teacher has not been able to visualise with his hands and gestures clear enough for the student to “see”. The bank angle is further exaggerated, with the airplane in an almost 90 degree angle in relation to their normal position (supposing that that is in line with the horizon). That the teacher is holding the model in front of him has as consequence not only that it is placed for the student to visually orient to it, but it is also almost offered to the student, so that she can touch and manipulate it.




The teacher now asks what the student in such a case would do first: *va skulle du göra först då*. [what would you do first then.]. Considering the exaggerated position of the model together with the parameters that need to be taken into account when analysing the unusual attitude, the teacher has now limited the array of possible answers to one that has not been earlier mentioned by the student. And interestingly, the student immediately says *skeva upp så* [level like this] as she reaches forward to turn the airplane thus levelling the wings of the model. In other words, what she could have been understood as not knowing before, is within a different material environment, when a different contextual configuration is brought into play, something that she indeed does know.

The model has facilitated and made it possible for the student to “see” something that she did not see or take into account before. An aspect of the unusual attitude that was not possible to discern from the demonstrations made with the hand and arm, was possible to

highlight with the model. Further, it was an aspect of the unusual attitudes that – considering both talk and action – was missing in the teacher's original question, when the verbal turn was about a low nose position, and the demonstration of the position of the airplane was done with a straight, flat hand.

The teacher now continues talking them through the recovery, demonstrating with the model how the airplane will move through the air.

Excerpt 4: The speed will increase

- 1 Teacher e: därefter upptagning.
uh: after that recovery.
- 2 (.) övergå till stigning. (.) de som
(.) transition to climb. (.) what
- 3 e viktigt e att som sagt farten
is important is as said that the speed
- 4 (.) kommer å komma
(.) will come
- 5 (.h) väldigt väldigt fort (.hh) så att
(.h) very very quickly (.hh) so that
- 6 [i de här läget-
in this position-
7 Student (vadå) kommer fort.
(what comes quickly.
- 8 Teacher farten.
the speed.
- 9 Student a.
yes.
- 10 Teacher den kommer (.)
it will (.)
- 11 Student a när du lägger oss s å.
yes when you put us li ke that.
- 12 Teacher precis.
exactly.
- 13 när vi ligger i ett sånt här läge.
when we are in a position like this.
- 14 Student a.
yes.
- 
- 
- 

After having demonstrated the procedure of the recovery, the teacher returns to the question of speed. In so doing he ties back to what the student earlier said; *men om de e väldigt hög fart så* [but if it is a very high speed then-]. Already then he marked her answer as in principle correct, and he is now going to further develop the issue of speed. The


student having mentioned the possibility of the speed being high, seems to warrant the teacher's presupposition that there is a common understanding that the speed will be high. What is now highlighted is that the speed will increase quickly: *de som är viktigt är att som sagt farten (.) kommer å komma (.h) väldigt väldigt fort* [what is important is as said that the speed (.) will come (.) very very quickly". The *som sagt* [as said] is doing the tying back to what was earlier said by the student (who is the only one who has been explicitly talking about high speed).

However this presupposition is at least in part wrong. Instead, this is a source of trouble to the student, who initiates repair (see Schegloff, Sacks, Jefferson, 1977; Schegloff, 1992) through asking the teacher what he means by *kommer fort* [comes quickly]. Her earlier response about the high speed was static, in that it was stating that the speed might be high but not excluding that it might also be low. It didn't reflect that the problem might be that the speed was either increasing or decreasing, something which would represent an understanding of the dynamics of the situation. Corroborating the analysis that the teacher was indeed presupposing the student's understanding of the speed, he treats the student's initiation of repair as having to do with a possible hearing problem, and repeats *farten*. [the speed.], to which the student answers *a*. [yes.] but no more. The teacher does another repair, expanding the trouble source to being about the quick increase in speed; *den kommer (.) öka väldigt fort*. [it will (.) increase very quickly].

The student formulates her understanding of what the teacher is saying through her utterance *a när du lägger oss så*. [yes when you put us like that.], something that the teacher immediately picks up on, once again demonstrating with the model what the attitude would look like in which the speed quickly increases. In his verbal turn he further confirms her understanding through saying *precis. när vi ligger i ett sånt här läge*. [exactly. when we are in a position like this.].

The teacher now summarizes what the required actions are when the nose position is low.

Excerpt 5: As soon as you see that you have a low nose position


- 1 Teacher så så fo- så fort du ser att
as as so- as soon as you see that
- 2 du har ett lågt nosläge. (.)
you have a low nose position. (.)
- 3 av me gasen på en gång å
reduce power at once and
- 4 uppskevning.
level the wings.
- 5 å så (.) Övergå till stigning.
and then (.) transition to climb.
- 6 (.) [när vi passerar horisonten-=]
(.) [when we pass the horizon-=]
((demonstration))
- 7 Student =vadå av med all gas.
=what reduce all power.
- 8 Teacher mm. all gas.
mm. all power.
- 9 Student m=
- 10 Teacher =de e bara å [dra av
=it is just to [reduce
((gesture))]
- 11 °på en gång då°. (.)
°at once then°. (.)
- 

What is required to do when recovering from an unusual attitude with a low nose is formulated as a generic rule. When you see that you have a low nose position you have to reduce power at once, level the wings and do a transition to climb: *av me gasen på en gång å uppskevning. å så (.) övergå till stigning.* [reduce all power at once and level the wings. and then (.) transition to climb.]. Co-occurring with the verbal turn are gestures. When saying

that the power is to be reduced, the teacher moves his hand demonstrating the action of reducing power. *uppskevning*. [level the wings.] and *övergå till stigning*. [transition to climb.] are both demonstrated with the model, where it is the movements of the airplane that are highlighted. It is interesting that speed is not demonstrated with the model. Nose position was as we have seen rather easily demonstrated with the hand only. Wing position was clearly demonstrated by using the model airplane. But neither gestures nor model afford the demonstration of speed, and certainly not differences in speed or the dynamics of speed. Thus the gesture that survives the use of the model is the enacting gesture showing how the power lever is adjusted to reduce power.

The student however, asks *vadå av med all gas*. [what (do you mean) reduce all power.] something which the teacher initially confirms, but then retracts and rephrases. It turns out that the generic rule that he has formulated about what to do when you have a low nose position is at least partly misleading.

Excerpt 6: Not possible to say in a general way

- 1 Teacher där- (.) de är: (.) de går egentligen
there- (.) it is: (.) it is really
- 2 inte å säga generellt sett
not possible to say in a general way
- 3 av med gasen eller alltid på me all gas
reduce power or always add full power
- 4 Student nej.
no.
- 5 Teacher har vi ett halvt (.) nos ner läge
if we have a half (.) nose down position
- 6 me väldigt låg fart. då kan du
with very low speed. then you can
- 7 till å me ge lite gas. (.) eller bibehålla
even add a little power. (.) or keep
- 8 den som vi hade innan.
the one we had before.
- 9 (.) bara se till så att vi kommer upp.
(.) only make sure that we get up.
- 10 (.) å sen (.) när vi passerar horisonten.
(.) and then (.) when we pass the horizon.
- 11 (.) då: skjuter du på full gas.
(.) the:n you add full power.
- 

The teacher now says that *de går egentligen inte å säga generellt sett alltid av med gasen eller alltid på me all gas* [it is really not possible to say in a general way always reduce power or always add full power]. Up until now, he has indicated that first there are certain actions that are appropriate and second that there is a specific order in which the actions recovering

the airplane from an unusual attitude with a low nose position should be performed. It turns out that this has been oversimplifying. Instead, the teacher now says, if the nose is in a half down position with a very low speed this would even require additional power rather than a reduction of power (lines 5-7). The complexity lies in the fact that the parameters speed, wing position, and nose position can vary in so many ways, thus making each unusual attitude slightly different from the other. When in the air, the situation will certainly be less unequivocal than it has been constructed discursively in the classroom. It will require of the student an awareness of the situation as a whole so that she can decide, for example, whether to add or reduce power and what the appropriate order of actions is.

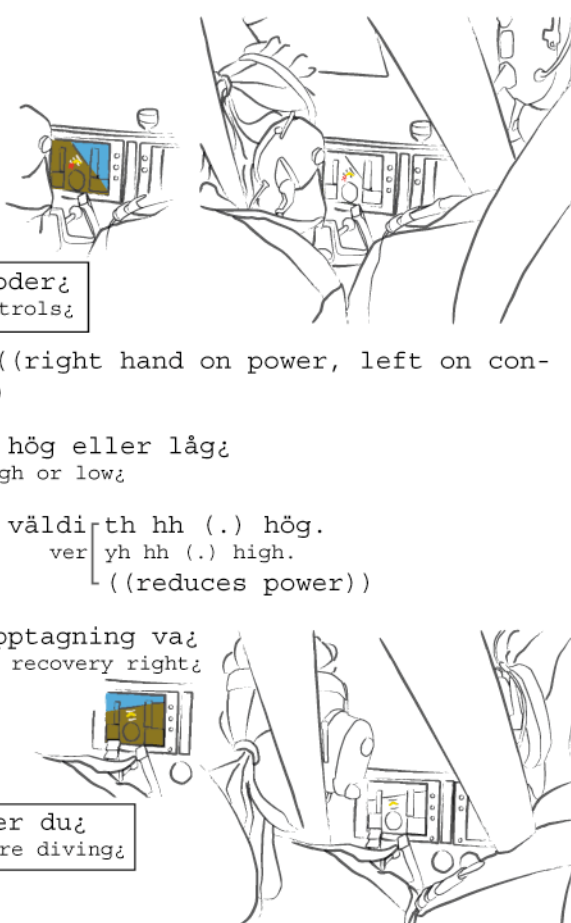
In sum, in the pre-briefing session that teacher and student have, relying on embodied social interaction, constructed what the correct procedures are in an unusual attitude with a low nose. In so doing, it has become clear that the complexity of the taught event resists straight-forward solutions. Throughout the interaction, the focus has been on either one or several of the aspects – speed and nose and wing position – both on how they in interaction constitute an unusual attitude, and different ways in which the unusual attitude should be dealt with.

Flight lesson

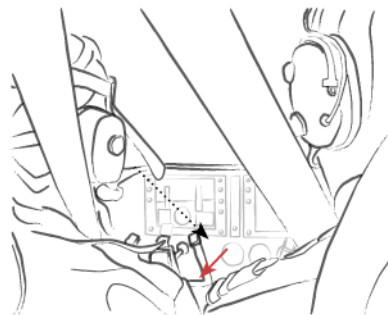
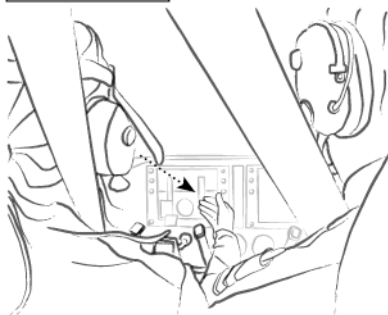
First unusual attitude

A while into the flight lesson it is time to practice recovering from unusual attitudes. The teacher announces that this is what they are going to do next, and the exercise is introduced with a demonstration. The teacher flies the airplane into an unusual attitude and describes the actions he is taking as he is doing the recovery. Next it is the student's turn to do the recovery. The teacher asks her to close her eyes and face down towards her lap as he flies them into an attitude with a low nose and a left bank angle.

Excerpt 7: First unusual attitude with a low nose

- 1 (19.4)
- 2 Teacher dina roder;
your controls;
- 3 Student (5.1) ((right hand on power, left on controls))
- 4 Teacher farten hög eller låg;
speed high or low;
- 5 Student hö- th väldi- th hh (.) hög.
hi- th ver yh hh (.) high.
((reduces power))
- 6 Teacher å så upptagning va;
and then recovery right;
- 7 (.)
- 8 Teacher nu dyker du;
now you're diving;
- 9 (1.5)
- 10 Teacher måste upp; måste stiga; stiga; stiga;
must go up; must climb; climb; climb;
- 11 (4.6)
- 12 Teacher å så passerar vi horisonten
and then we pass the horizon
- 13 va vill vi göra då,
what do we want to do then,
- 14 Student stiga;
climb;
- 15 (0.6)
- 16 Teacher marken e ju där nere va.
the ground is down there right.
- 

- 17 (1.3)
- 18 å hur mycke stiger vi?
and how much are we climbing?
- 19 (1.3)
- 20 Student >va sa du?
>what did you say?
- 21 Teacher hur mycke stiger vi då?
how much are we climbing then?
- 22 (1.3)
- 23 Student nu?=
now? =
- 24 Teacher =full gas (va).
=full power (right).
- 25 Student °fu ll (a)°
°fu ll (a)°
└((adds power))
- 26 (1.2)
- 27 Teacher när vi passerar horisonten full gas.
when we pass the horizon full power.
- 28 (2.5)
- 29 Teacher bra. va ()
good. what ()
- 30 Student nu kunde ja ha dratt upp
now I could have pulled it up
- 31 den lite tidigare å dratt av gasen.
a little earlier and reduced the power.
- Demonstrating required actions "dratt upp" "dratt av"
- 32 Teacher exakt.
exactly.



- 33 (1.8)
- 34 Teacher >såattde< gäller att man reagerar snabbt
>soit's< important that you react quickly
- 35 där så att du inte ligger kvar i
there so you don't stay in
- 36 dy:kning.=för de tjänar ingen.
a di:ving position.=because that is no good.
- 37 Student nå.
no.
- 38 Teacher då (.) kommer du bara >närmare marken.
then (.) you will just >come closer to the ground.

The recovery is initiated by the teacher who says *dina roder* [your controls], a way of formally transferring the responsibility of flying the airplane. The student is sitting with her eyes closed, face down. Upon hearing the *dina roder* [your controls] the student immediately moves her head up from facing down towards her lap to a position where she can see the flight displays in front of her. The movement is quick, and she immediately focuses the display in front of her. As soon as her face is facing forward, her right hand moves to the power lever and her left hand takes the controls.

The implication of the directive *dina roder* [your controls] is that the teacher is no longer primarily responsible for flying the airplane and consequently he, in his turn, lets go of the power lever and the other controls. In a general way, directives can be defined as instructing another into seeing the world in a certain way upon which subsequent action is built. Implicated in this specific directive are two things. First, it is now the student who flies the airplane. She takes the appropriate position for flying the airplane, gazing at the display and with hands and feet on the controls and power lever. Second, there has been a transfer of responsibility from the teacher to the student so that it is now the student who not only flies the plane but who is also held accountable for flying the airplane. This is an educational setting and hence the teacher is in some respect always ultimately responsible for the student's actions or at least for monitoring the student's actions whether he is in control of the controls or not. However, the question of responsibility in this situation bears resemblance to the situation in the commercial flight industry. There the captain is ultimately responsible for the flight but there is still a transfer of responsibilities between captain and the second pilot during the flights and a division of labour where they have different tasks to fulfil (cf. Nevile, 2004). In the sequence there is however a noticeable

silence, in that the *dina roder* [your controls] is normally a first pair part of an adjacency pair (Schegloff & Sacks, 1973), followed by the second pair part *mina roder* [my controls].

Having taken control of the airplane, the student starts recovering from the unusual attitude by first of all attending to the bank angle of the wings. Her first – and at this time only – action is thus to attempt to level the wings in relation to the horizon. First attending to the wing position is in full agreement with what the teacher and student co-constructed as an appropriate first action when they were talking about the recovery in the classroom on the ground.

Three seconds after the student has taken the controls and levelled the wings, the teacher says *farten hög eller låg* [speed high or low?]. His turn has a slight upwards intonation at the end and is grammatically formulated as a question with two (in theory) possible answers – high or low. The student's response to this is that the speed is *hö- th väldith* (.) *hög*. [hi th veryh high.]. In the first part of the turn, she starts up what can be projected to be on its way to *hög* [high], but then cuts off and instead restarts with the adverbial intensifier *vældith* [veryh], which is reinforcing that the speed is not high but indeed very high. When producing *vældith* [veryh], the student further reduces power. There is a quite dramatic decrease in the level of sound.

The teacher's turn in is as said above grammatically constructed as a question. However, in this context, it is doing the action of a directive with several layers. It tells the student that she needs to pay attention to the speed of the airplane and to act in accordance with what she finds. If we parse how the directive is doing this, we can initially state that it is a question, asking the student whether the speed of the airplane is high or low. The formulation of the directive is important and part of what constitutes this as an educational setting. Alternative formulations would have been to say for example "lower the speed" or the more specific "reduce power" (which of course also can figure in an educational context). Formulating it as a question of whether the speed is high or low creates a space within which the student is both given room to act and in which she is further expected to act, and it is a space that is rather open. First of all, the question presupposes and requires the student to know where to find the instrument indicating speed. Second, it both presupposes and requires that she be able to read and interpret the instrument. Third, the student must be able to make the judgment whether the speed is high or low, or in other words what counts as a high and a low speed. Fourth, based upon the gathered information, the student is expected to act upon it with appropriate actions. In this case,

the action that the student performs in response to the directive is to orient to it as a matter of reducing power. Altogether, these presuppositions constitute what is captured in the notion of situation awareness and we can here see how the perception of the whole situation is what the student lacks, as she orients to aspects of the unusual attitude.

Following this, a series of directives that are all related to the position of the nose of the airplane occur. In response to the prior directive, the student reduced the speed of the airplane. Having reduced the speed without taking up the nose has resulted in the airplane moving slower through space, but it is still following a trajectory heading towards the ground. The teacher thus proceeds through saying *å så upptagning va?* [and then recovery right?]. This turn requests an action: that the student should take up the nose of the airplane. However, the student is not immediately responding to the directive with an appropriate action, and the teacher continues with the descriptive turn *nu dyker du?* [now you are diving?].

This utterance is first of all describing the state in which the airplane is – it is heading towards the ground in a diving position. Being produced as an add-on to the first directive – *å så upptagning va?* [and then recovery right?] – it is also providing an explanation or account of why it is important to do the recovery. Describing the current state in terms of diving is in the context of flying of particular significance. A diving airplane is heading towards the ground, which in other words means that if appropriate actions are not taken the airplane will eventually crash. This utterance is thus alerting the student to an imminent danger and in doing so it is directing the student to pay attention to the position of the nose of the airplane and the speed, and to act so as to change the position and recover the airplane from diving.

The student now starts taking up the nose of the airplane. The teacher further continues *måste upp? måste stiga? stiga? stiga?* [must go up? must climb? climb? climb?]. At the beginning of the turn, the airplane is still heading down. When the teacher pronounces the last *stiga?* [climb?] they cross the horizon. For a little while the airplane continues to climb and the nose is heading up towards the sky.

The repetition and variation of the directives are to be understood in relation to the student's actions, and the time that these actions demand in order to be carried out. In comparison to the question of high or low speed that was quickly remedied by reducing the speed, in this case it takes a longer time to raise the nose of the airplane and recover from the diving position in which the airplane initially is. The student has begun to recover the nose

position of the airplane already in response to the teacher's descriptive directive *nu dyker du* [now you are diving]. However, besides the action taking time to accomplish, the repetitions further emphasise and highlight the importance of the action (see further the discussion in relation to excerpt 8 in which there is a similar three-part repetition).

The last part of the first recovery, is initiated by the teacher producing the question *å så passerar vi horisonten va vill vi göra då*, [and then we pass the horizon what do we want do then,], invoking the generic rule that they had earlier formulated in the classroom: when we pass the horizon, then you add full power. The student treats this turn as a first pair part question, and answers with the verbal turn *stiga* [climb], however without any further action. In response to her answer, the teacher says *marken e ju där nere va*. [the ground is down there right.]. Before pursuing analysis further, it is important to determine what is going on in the airplane as these turns are produced. When the teacher is producing the first utterance, the nose of the airplane is already above the horizon. When the student responds to his question she is thus already in what she (probably) understands to be a climbing position and she acts as if the action was already accomplished. This is visible in that she levels the airplane to the horizon, an action that co-occurs with the teacher's evaluation of her answer to the question.

The teacher however, treats the student's answer and her actions as insufficient. This is demonstrated through what comes next, when he pursues in asking the student questions. The teacher initially picks up on the student's answer *stiga* [climb], and asks how much they are climbing. As this question is produced, the airplane is in a horizontal position, where the yellow marker is on the line of the horizon. The student initiates a repair asking what the teacher said. He repeats his earlier turn, slightly reformulating it. This is again followed by a noticeable gap and then the student asks *nu?* [now?]. She has by now held a horizontal position for approximately 4 seconds, and it is clear, by the troubled interaction with repairs and the student's questioning the relevance of the teacher's question, that the student considers the activity of climbing accomplished.

This is not the position of the teacher. In order to climb, it is not enough to hold a high nose position, but you have to add power too. When the student in answer to the teacher's question about how much they are climbing has asked *nu?* [now?], the teacher in a turn latched to the student's produces the directive *full gas (va)*. [full power (right).]. The

student repeats *full (a)* [°full (a) °]¹, adding power. *full gas (va)*. [full power (right.)] is a specific request to add power. In this way, this directive is different. The earlier teacher turns were telling the student to pay attention to different aspects where the first thing required was to notice something on the instruments and the next to do some (specific) action. That this last directive is more straightforward in indicating precisely what the required action is, is probably a consequence of the prior troubles in the shared understanding. At the same time, the final *va* (right) indicates that this is something that the teacher claims should be known by the student. It has the flair of a reminder.

In response to the student's actions, the teacher repeats the contents of the question initiating this whole sequence, this time in the shape of an instructional, declarative statement: *när vi passerar horisonten full gas*. [when we pass the horizon full power]. The turn is formulated so as not to be valid for this specific situation only, but in more general terms, just as in the classroom it is formulated as a generic rule. We should also notice that in this utterance there is no explicit reference to the necessity of climbing, the issue that was the object of confusion earlier on. However, climbing is not only about nose position. Instead, in order for the airplane to climb and not just hold a high nose position, power needs to be added. Thus, the climbing and the adding of speed are closely connected, whereas it seems that the student orients to climbing as being solely a matter of nose position. All through the sequence, the student is orienting to nose position, wing position, and speed and to the actions required to recover the airplane from the unusual attitude as separate actions.

Closing this first recovery is an evaluation of the student's performance. The teacher starts with the lexical TCU *bra*. [good.] and continues, however in overlap with the student who herself analyses what she could have done differently, upon which the teacher surrenders the turn to the student. She proposes that she could have taken up the nose earlier, and reduced power (lines 30-31). This refers back to the first part of the recovery, when they were heading towards the ground and the student was too late in her reactions. The teacher corroborates her analysis with an *exakt*. [exactly.], which is followed by an elaboration that emphasises the importance of reacting quickly and not staying for too long in a diving position (lines 34-38).

¹ The student's turn in Swedish is "full (a)". The "a" within parentheses can both be part of "gas" (power) or "ja" (yes). In other words, it is not entirely possible to say that it is a repetition of the teacher's whole phrasal TCU.

Second unusual attitude

Immediately following upon the first recovery the teacher flies the airplane into another unusual attitude with a low nose position and a right bank angle. As in the first exercise, the speed is rather high.

Excerpt 8: Second unusual attitude with a low nose

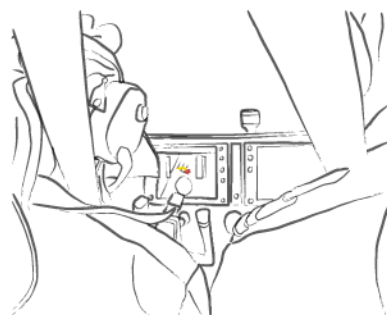
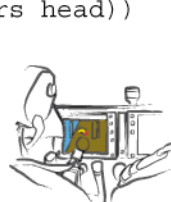
1 Teacher <=vi kör en till.
<=let's do another one.

2 Student okej di na roder,
okay yo ur controls,

3 Teacher mina rod- mina roder,
my contr- my controls,

4 Student ((lowers head))

5 (14.5)



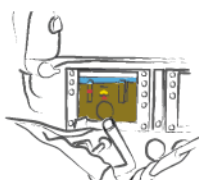
6 Teacher dina roder?
your controls?

7 (3.3)



8 Teacher av me gasen va?
reduce power right?


9 av, a-v, av,
reduce, re duce, reduce,
((reduces power))



10 å så upp?
and then up?

11 (2.3)



- 12 Teacher dä:r ska de kännas.
tha:t's how it's supposed to feel.
- 13 (1.5)
- 
- 14 Teacher å: så full gas.
a:nd then full power.
- 15 Student ((adds power))
- 16 (5.6)
- 17 Teacher >a såattdu< †mås:te reagera (0.3) snabbare
>a soyou< †mus:t react (0.3) faster
- 18 på de där. me: gasen och upptagningen.
to that. wi:th the power and the recovery.
- 19 Student a
yes
- 20 Teacher såatt (0.8) du- e vi va aldri uppe i mer
so that (0.8) you- e we were never up in more
- 21 än kanske en komma åtta g i de där läget,
than maybe one point eight g in that position,
- 22 Student okej.
okay.
- 23 Teacher hur många g tål flygplanet?
how many g can the airplane take?
- 24 Student: e: många hehe .hh
uh: many hehe .hh
- 25 Teacher tre komma sjuttiåtta.
three point seventy eight.
- 26 Student okej.
okay.
- 27 Teacher så att (0.5) e: (0.3) de e ingen risk att
so that (0.5) uh: (0.3) there is no risk that you
- 28 du överbelastar flygplanet i de där läge.
you overload the airplane in that position.

29 o-m du 'nte drar=
 i f you 're not pulling=
 30 Student [okej .
 okay .]
 31 Teacher = [(0.8) <preciss> hela vägen bak da .
 = [(0.8) <exactly> all the way back then .
 ((gesture pulling back))
 32 Student a .
 yes .
 33 Teacher mene: men då >drar du väldigt mycket< så
 but e- but then >you are pulling very much< so
 34 att de ska kännas att du gör en urgång .
 that you should feel that you are doing a recovery .
 35 Student okej .
 okay .

Initiating the student's actions is the formally prescribed directive: *dina roder* [your controls]. The student takes over the controls, putting her right hand on the power lever, and the left on the controls.

Her first action is to level the wings, and no more. After 3.3 seconds, the teacher intervenes, saying *av me gasen va* [reduce power right] and as the student is not taking immediate action he then continues *av, av, av*, [reduce, reduce, reduce,]. In a similar way as in the first recovery, when there was also a critical situation that needed action to be taken, the teacher repeats the same lexical unit, thus highlighting one specific aspect of what it is that the student needs to do. The repetition further underlines the urgency of the situation. In both cases it occurs just after the student has failed to recognise the proper action. In both situations the exact opposite of the desired situation has developed.

As the student has reduced power the teacher tells the student to take up the nose through the verbal turn *å så upp* [and then up]. At this stage the direction is down towards the ground in a similar way as in the first recovery. In response to the directive, the student takes up the nose and the airplane starts climbing. When the marker on the display reaches the horizon, the teacher says appreciatively *dä:r ska de kännas*. [tha:t's how it's supposed to feel.]. With this turn the teacher highlights one aspect of the recovery that has not yet been made relevant by the participants, and that is how you should feel the impact of the recoveries on your body. Thus a new aspect has been introduced, a new way of experiencing and evaluating the recovery. It is worth noticing that this commentary is being done in the airplane, as they are experiencing the feeling, rather than in the classroom.

By now the yellow marker on the display has passed the horizon, indicating that the student has taken up the nose. However, she has not added power this time either, and the teacher explicitly tells her to do so; *å: så full gas*. [*and then full power.*], a directive which is acted upon by the student who adds power.

What now follows is an evaluative phase, when the teacher in conclusion says that the student must react more quickly with both power and the taking up of the nose (lines 17-18). This is the same kind of the critique that was formulated after the first recovery, where the teacher underlined the importance of reacting quickly so as not to stay in a diving position for too long.

This time, however, the teacher continues beyond the question of quick reactions, and returns to the question of feeling. He says *så att (0.8) du- e vi va aldri uppe i mer än kanske en komma åtta g i de där läget*, [so then [0.8] you- e- we were never doing more than perhaps one point eight g in that situation,]. First of all, the repair from you to we is interesting. As Lerner and Kitzinger (2007:25) write, the correction from ‘you’ to ‘we’ is not doing simply error correction. As in the Lerner and Kitzinger cases, in this case it would not have been erroneous to say that it is the you, that is the student, that was doing the 1.8 g as she was in fact responsible for flying the aircraft. In other words, one can ask what in addition to referring is being done and is treated as so important so as to halt the progressive realisation of the turn, when obvious error is not involved. It seems that the correction from ‘you’ to ‘we’ is related to the fact that it is the whole ‘equipment’ – the airplane and two pilots – that has not been experiencing more than one point eight g. As a consequence of the changed pronoun, the experience is constructed as a shared one rather than something a particular person or object is responsible of.

Second, the feeling is translated into technical terms, into a question about g-forces. The ability to say that they were doing specifically 1.8 g in that situation is derived from prior experience, that is, a combination of the feeling in the body and knowing how to interpret the instruments. However what is interesting is how the embodied feeling is tied to technical knowledge and actions. It is tied to the ability of reading and interpreting the instruments and being able to understand its implications. It is also tied to the understanding of actions and their implications. This is something that will be pursued by the teacher, who continues by asking the student *hur många g tål flygplanet?* [how many g can the airplane take?]. The student clearly does not know, as she answers *e: många hhehe .hh* [e: many hhehe .hh], an answer that is through the student’s “laughing” displaying

knowledge that this is not the correct answer. The answer is obviously wrong, although it orients to the teacher having said that they were not “doing more than”, something which indicates that the airplane can take much more. The teacher immediately provides the correct *tre komma sjuttiåtta* [three point seventy eight], an utterance that stands in stark contrast to the student’s imprecise *många* [many]. It is not mitigated by a pause between the student’s answer and the teacher’s correction. Later on, in the debriefing session, the overall critique that the teacher will formulate is that the student has not studied enough and is not prepared enough. The student acknowledges the correction through saying *okej* [okay], this time without any laughter particles, thus orienting to the teacher’s correction. And the teacher continues by underlining that there is no risk that the student is going to overload the airplane under the circumstances, saying that *de e ingen risk att du överbelastar flygplanet i de där läge*. [there is no risk that you overload the airplane in that situation.]. However, the *ingen risk* [no risk] turns out to be a problem, and the teacher, in overlap with the student’s acknowledging *okej* [okay], takes back there being no risk as it is conditioned – *om du inte drar (0.8) <preciss> hela vägen bak da*. [if you don’t pull (0.8) all the way back then.] which is further developed *men då >drar du väldigt mycket<* [but then >you are pulling very hard<] with what could be described as an in the context extreme action. The way it is phrased it also says that it is improbable that the student would pull that hard as it would require an extreme action on her behalf. As an extreme action it is something out of the ordinary, and something that in other words would be a remarkable event and hardly something that the student would do without noticing herself or the teacher noticing that something extraordinary was under way.

Concluding the section about the more technical question of g-forces, is the statement that *de ska kännas att du gör en urgång* [it (you) should feel that you are doing a recovery]. Thus they return to the question of embodied feeling and how the experience of the body is to be used when determining what the right actions are.

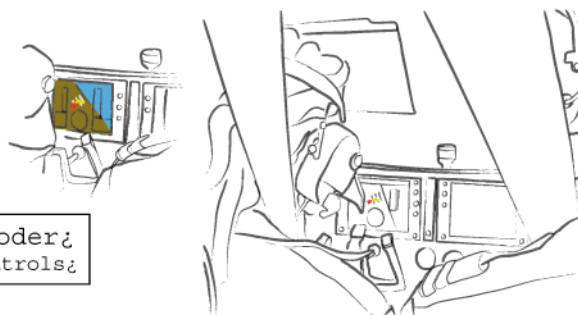
Last unusual attitude

In preparation for the final recovery, the teacher flies the airplane into an unusual attitude with a low nose and left bank angle.

Excerpt 9: Last unusual attitude with a low nose

1 Teacher vi kör den sista da.
we will do the last one then.

2 (8.0)



3 Teacher dina roder¿
your controls¿

4 (16.3)

The student levels the wings and starts taking up the nose. She is rather late in adjusting the speed, and it's not until the yellow marker is approaching the horizon that she reduces the speed. She then continues past the horizon, taking up the nose. With a delay she adds power.

5 Teacher bra.=då har du helt rätt me
good.=then you did completely right with

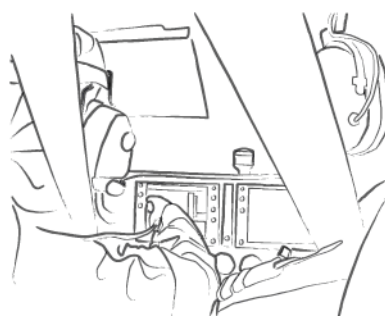
6 rodrén när du gjorde upptagning.
the controls when you did the recovery.

7 d[e som du] måste tänka på-
wh at you have to thin k about-

8 Student a:: (.) de va
ye::s (.) it was

9 (så=här)/(så=att) (.) när
(like=this)/(so=that) (.) when

10 farten blev röd
the speed was red



- 11 de e då jag typ börja reagera.
 it was then that I like started to react.
- 12 Teacher precis så att-
 exactly so that-
- 13 Student de e farten ja måste kolla
 it's the speed I have to check
- 14 li-te mer på.
 a b it more.
- 15 Teacher de-
 what-
- 16 Teacher de du ska reagera på de e inte farten
 what you should react to that isn't the speed
- 17 utan de e nosläget.
 but it's the position of the nose.
- 18 Student [a.]
 [yes.]
- 19 Teacher [e] re lågt nosläge då betyder de
 [is] it a low nose position then it means
- 20 av me gasen.
 reduce the power.
- 21 Student a.
 yes.
- 22 Teacher så att de e inte farten
 so it isn't the speed
- 23 egentlige- n.
 really y.
- 24 Student [ja tänkte bara på (.)
 [I was thinking only (.)
- 25 e [upp] med nosen då;
 uh [up] with the nose then;
 ((hand on controls demonstrating 'up'))
- 26 Teacher ((nods)) precis.
 exactly.

The teacher says *dina roder* [your controls], and the student takes over. She levels the wings and starts taking up the nose. She is rather late in adjusting the speed, and it's not until the yellow marker is approaching the horizon that she reduces the speed. She then continues past the horizon, taking up the nose. With a delay she adds power.

The teacher starts his evaluation with the lexical TCU *bra*. [good.]. He further elaborates on what it is that was good: *då har du helt rätt me rodren när du gjorde upptagning*. [then you were completely right with the controls when you did the recovery.]. Following upon

this more positive evaluation of the student's performance, the teacher adds *de som du måste tänka på*- [what you have to think about-], a turn that he abandons as he finds himself in overlap with the student. Orienting to the turn as possibly complete, the student has started up a turn in overlap with the teacher's *de som du måste tänka på*- [what you have to think about-]. She comes in with an *a* [yes], and continues with what is going to be an anticipation of a possible critique and an evaluation of her own actions. The problem that she identifies is that she was tardy in reacting to the high speed – it wasn't until *farten blev röd* [the speed went red] (that is, the digits on the display indicating speed changing from white to red thus indicating that the speed is very high) that she started reacting. As was noticed in the description of the recovery, the student is indeed tardy in her adjustments of the speed. However, the question is what it is that should make you adjust the speed – is it the airspeed indicator displaying red digits or is it something else? The teacher confirms the student's description of her actions with a *precis* [exactly] that is continued with a *så att* [so that]. The teacher's turn is however this time interrupted by the student who elaborates on her evaluation of her performance, further indicating what it is that she needs to do differently: *de e farten ja måste kolla lite mer på*. [it is the speed that I have to check a bit more.]. In doing so, she elegantly builds upon the teacher's turn in lines 13-14, something that could have turned out to be a display of a collaboratively constructed understanding of what was required of the student. However, the teacher initiates a new turn in overlap with the student, cuts off and then continues in the clear saying that what she should react to isn't the speed but the position of the nose (lines 15-16). In other words, the teacher confirms that the description that the student did not react until "the speed was red" was correct, but he dismisses the conclusion drawn by the student that it is speed in isolation that is critical. Instead, she has to be able to project that when the nose position is low, this potentially means that the speed is high or will increase, and thus it is important to pay attention to speed immediately even if the speed isn't too high during the initial part of the recovery. The ability to project how the situation will develop given the facts that are at hand, is an important part of what constitutes situation awareness. However, in this situation it is not formulated in that reflexive way. In the pre-flight briefing session, the teacher first formulated generic rules of what to do when the nose position is low, but towards the end he modified the generality of the rule and qualified it by saying that it does depend on the situation, that is the position of the nose in combination with the speed. Here this is not problematised, but instead once again a generic rule is formulated: *e re lågt*

nosläge då betyder de av me gasen. [is it a low nose position then it means reduce the power.]. The student answers this by describing what she was doing, which was paying to attention to the nose position only: *ja tänkte bara på (.) e upp med nosen då;* [I was just thinking (.) e take up the nose then;]. (lines 23-24).

Debriefing session

In the debriefing session, the teacher identifies the student's tardy reactions in a more general sense as constituting a problem.

Excerpt 10: You have to act already when you have a low nose

- 1 Teacher jobba mer med gasen anpassa
work more with the power adjust
- 2 den å reagera snabbare me gasen.
it and react quicker with the power.
- 3 =samma sak med gasen när de gäller
=same thing with the power when it comes to
- 4 onormala lägen. du måste vara
unusual attitudes. you must be
- 5 snabbare på den. å då (.)
quicker on that. and then (.)
- 6 titta inte bara på- vänta tills att
don't just look at- wait till
- 7 farten [kommer upp
the speed [increases
((gesture propeller))]
- 8 utan (.) du måste agera redan när du
but (.) you have to act already when you

"har"-
Demonstrating an
airplane with a low
nose



- 9 har ett lågt nos läge.
have a low nose position.

"lågt nos"-
Demonstrating
reducing speed



- 10 (.) de är samma princip som du har
(.) it is the same principle that you have
- 11 övat tidigare.
practiced earlier.

12 under () med onormala lägen du vet.
 during () with unusual attitudes you know.

13 [låg nos. (.) e: vikning.
 low nose. (.) uh: (leveling).
 ((gestures.....

14 å sånt där till exempel.]
 and things like that for example.]
 ))

15 Student m

16 Teacher [av med gasen. skevning. upptagning.
 reduce speed. level the wings. recovery.
 ((gestures.....

17 passera horisonten full gas.
 pass the horizon full power.

18 övergår till stigning]
 transfer to climb]
 ))

19 de är exakt samma procedur.
 it is exactly the same procedure.

20 =skillnaden är bara att (.)
 =the difference is just that (.)



21 [nu tittar du (.)
 now you're looking (.)

22 (bara) på skärmen helt enkelt.
 (only) at the display simply.

23 Student m

The teacher says that the student needs to react more quickly when it comes to adjusting power, and not wait until the speed is too high. He tells her *titta inte bara på- vänta tills att farten kommer upp* [don't just look- wait till the speed rises], which orients to how the student in the airplane explicitly said that she did not react to the high speed until she visually experienced that the speed was red (Flight lesson, Excerpt 9, lines 8-11). The self-repair from *titta inte bara på-* [don't just look-] to *vänta* [wait], where the issue of 'looking'

is replaced by 'waiting', captures that the crucial problem is not the looking at the instruments in themselves, but rather the tardiness in action, which is captured in the choice of waiting. Further, it is about the important ability to project how the situation is going to develop, an important part of what constitutes situation awareness (cf. Endsley, 1995:36). What does a low nose imply? The teacher says that the student needs to act already when the nose position is low: *du måste agera redan när du har ett lågt nosläge* [you have to act already when you have a low nose position]. Co-occurring with the teacher's verbal turn are gestures demonstrating how a low nose position requires reduced speed. These gestures are very swift. During *har* [have] the teacher demonstrates an airplane with a low nose, and as he produces *lågt nos* [low nose] he imitates the manipulation of the speed lever reducing speed. In other words, the student should be able to project that if the nose position is low one of the possible consequences is that the speed will increase.

The recovery is then reproduced as a generic rule *av med gasen skevning upptagning passera horisonten full gas när du övergår till stigning* [reduce power level the wings recover pass the horizon full power when you transition to climb]. Etc.

As was mentioned in the beginning of the analysis, the student does not pass this lesson, but has to do it again. The reason to why she does not pass has to do with her being ill prepared, with the claim that she has not studied enough, and is not directly linked to her performance of the recoveries.

Second flight lesson

Pre-flight briefing session

This second flight lesson the teacher is a different one than in the first and third lesson.

Excerpt 11: Like if you were under the horizon

- 1 Student =på dom här onormala lägen (.) e:
 =on these unusual attitudes (.) uh:
- 2 Teacher m
- 3 Student visst var de så typ (.) när de
 wasn't it like (.) when it
- 4 [va:. asså om man va under horisonten
 was:. like if you were under the horizon
 ((gesturing low nose position))]
- 5 då skulle man dra av gasen.
 then you were to reduce power.
- 6 Teacher (1.6) ja (.) >de beror på< vilken fart
 (1.6) yes (.) >that depends on< the speed
- 7 du har.
 you have.
- 8 Student okej.
 okay.

The teacher introduces the briefing session by presenting what it is that they are going to do during the flight lesson. One of the manoeuvres that are mentioned is recovery from unusual attitudes. A little while into the briefing session, the student initiates talk about the unusual attitudes through checking her understanding of what is required when they have a low position of the nose. She says *visst var de så typ (.) när de va:. asså om man va under horisonten då skulle man dra av gasen*. [it was like (.) when it was:. that is if you were below the horizon then you were supposed to reduce power.]. The state of being *under horisonten* [below the horizon] is said in reference to how the airplane shows up in the shape of a yellow triangle on the display in the airplane. The student also visually represents the airplane with a gesture: her arm and hand demonstrating how the airplane would be positioned with a low nose. The utterance is not grammatically formulated as a question but rather as a statement that requests confirmation. In other words, the way that the request for confirmation is formulated it has a preferred answer, which is “yes”. It is also formulated implying the existence of a generic rule.

That a dispreferred answer is under way is demonstrated first of all by a 1.6 second pause. The teacher then says *ja* [yes] which is followed by a *>de beror på< vilken fart du har*. [>it depends< on the speed you have.]. The issue of speed is thus not linked to nose position in a clear-cut way. In the pre-flight briefing session preceding the first flight lesson

that teacher said that it is not possible to formulate a rule that is applicable in all cases where the nose position is low. In the end however, that was the rule that was formulated and confirmed at several instances. Thus, that it depends on the speed is not an entirely new answer to the student. However, during the debriefing session too, it was said that when there is a low position of the nose you can project that speed will increase, which is what you are to act to prevent. As is made clearer in this second pre-flight briefing session is that to be able to make the projection that the increase in speed will be problematic, you have to consider not only the position of the nose but also the speed at the moment when the recovery is initiated, that is in the initial moments of taking over the controls.

Excerpt 12: It feels logical to reduce the power

- | | | | |
|---|---------|---|--------------------------------|
| 1 | Teacher | så att du måste kolla så att säga men
so you have to check so to speak but it: m: | |
| 2 | | de: m: i nie fall av tie ja.
in nine out of ten cases yes. | (för att) (.)
(because) (.) |
| 3 | Student | | a
yes |
| 4 | Teacher | flygplanet är ju på väg neråt.
the airplane is on its way down.
((demonstrates movement downwards)) | |
| 5 | Student | a
yes | |
| 6 | Teacher | å: vi vill ju inte (.) komma ännu fortare
and: we don't want (.) to arrive even faster | |
| 7 | | till backen. så att då känns de ju
at the ground. so then it feels | |
| 8 | | logiskt å dra av gasen liksom.
logical to reduce the power like. | |
| 9 | Student | ((nods)) | |

In this second briefing session, the teacher continues by saying that *så att du måste kolla så att säga men de: m: i nie fall av tie ja*. [so you have to check so to say but that m: in nine cases out of ten yes.]. Which is to say that it is important to first check the actual speed, because even if the speed in the majority of the cases will indeed be high, this is not always so.

The teacher in the first flight lesson was saying that recovering from an unusual attitude was to some extent a matter of “common sense”. The teacher in the second flight lesson says something very similar, which is however further qualifying the “common sense” in terms of logic, saying that as the airplane is following a trajectory towards the ground *å: vi vill ju inte (.) komma ännu fortare till backen. så att då känns de ju logiskt å dra av gasen liksom.* [a:nd we don’t want to (.) approach the ground even faster. so then it feels logical to reduce the power.]. In this way both teachers appeal to the student’s instincts or common sense albeit in different ways.

Excerpt 13: It’s about situational awareness

- | | | |
|---|---------|--|
| 1 | Student | å sen
and then <div style="display: inline-block; vertical-align: middle; margin-left: 5px;"> <div style="display: inline-block; vertical-align: middle;"> upp till horisonten
 up to the horizon </div> <div style="display: inline-block; vertical-align: middle; font-size: 2em;">}</div> <div style="display: inline-block; vertical-align: middle;"> ((holds the arm in an upwards </div> </div> |
| 2 | | å sen dra på gasen.
and then add power.
direction.....) <div style="display: inline-block; vertical-align: middle; font-size: 2em;">}</div> |
| 3 | Teacher | a. så att de men de blir ju-
yes. so that it but it becomes- |
| 4 | | de handlar ju om situational awareness=
it is about situational awareness= |
| 5 | Student | =m= |
| 6 | Teacher | =de handlar ju om att (.)
=it is about that (.) |
| 7 | | <u>du</u> ska med hjälp av instrumenten se (.)
<u>you</u> will with the help of the instruments see (.) |
| 8 | | <div style="display: inline-block; vertical-align: middle;"> vilket läge är vi i nu liksom.
 which situation are we in now like.
 ((as if looking down at display)) </div> <div style="display: inline-block; vertical-align: middle; font-size: 2em;">}</div> |

The student now continues in her search of a generic rule, continuing her recital of required actions. She says *å sen upp till horisonten å sen dra på gasen.* [and then up to the horizon and then add power.]. The teacher minimally confirms this with an initial *a* [yes] which is followed by something different than an enumeration of required actions. This teacher instead emphasises that what actions are required depends on the situation. He says *de handlar ju om situational awareness (S:m) de handlar ju om att (.) du ska med hjälp av instrumenten se (.) vilket läge är vi i nu liksom.* [it is about situational awareness (S:m) it is about (.) you will with the help of the instruments see (.) what situation we are in now].

This utterance is interesting in the sense that it formulates the manoeuvre in a different way than it has earlier been talked about. Focus was then rather on the performance of the manoeuvre *per se*, whereas it is now about correctly understanding and judging the situation at hand, something which will in turn provide ground for decisions about required actions. Demonstrating the displays and how the student should look at them highlights in a pragmatic way the correct scanning patterns.

Further, the *du ska med hjälp av instrumenten se* is providing a frame for the demonstration of how the student will look at the displays, something which the teacher enacts when producing the utterance *vilket läge är vi i nu liksom*. His hands are held high during the production of several turns, but at this instance they slightly change shape and seem to be depicting the display that will be looked at, something that he also enacts as he looks down at the imagined screen during the initial part of *vilket läge är vi i nu liksom* to then shift gaze and look at the student.

Excerpt 14: That's like fast. And downwards

- 1 Teacher =a okej vi är på väg mot backen me: (.)
=yeah okay we are on our way to the ground with: (.)
- 2 hundra::förti knop;
a hundre::d forty knots;
- 3 Student m
- 4 Teacher a de e ju fort liksom. å neråt.
a that's like fast. and downwards.
- 5 a då: e de [läge å dra av] gasen.
a then: it is [time to reduce] the power.
[((reduce power))]
- 6 Student m
- 7 Teacher vi är på väg (.) ner mot backen
we are on our way (.) down to the ground
- 8 (.) med (.) tretti knop.
(.) with (.) thirty knots.
- 9 Student m
- 10 Teacher [därför att ja har precis lagt (.)
[because I have just put (.)
[((demonstrates with the hand how
- 11 liksom (.) precis bara vänt runt
like (.) just only turned
the airplane is moving.....
- 12 flygplanet så här,
the airplane around like this,
.....))]
- 13 Student m
- 14 Teacher a då:u: [e de ju ingen pa]nik med
yes the:u:n [there is no pa]nic to
- 15 Student [°tretti° hh
[°thirty° hh]
- 16 Teacher å dra av ga- [gasen eller hur.
reduce po- [power right.
- 17 Student [nej
[no]

- 18 (1.3)
- 19 Teacher så då kan man ju ha den på samtidigt
so then you can have it on at the same time
- 20 som man [(.) lyfter upp då.
as you [(.) lift up then.
(trajectory)]

The teacher elaborates by describing two contrasting cases, both with a low nose but with a difference in speed. The first case is described as being on the way toward the ground in one hundred forty knots *vi är på väg mot backen me: (.) hundra::förti knop*; [we are moving towards the ground in (.) a hundre::d forty knots;], something which the teacher describes as being fast and something that requires that power is reduced. During the whole utterance the teacher holds his hand in a position demonstrating the low position of the airplane, where the high speed is enacted with a push downwards with the hand as he simultaneously says *backen* [the ground].

The contrasting case is set up in a similar way, introducing it by saying *vi är på väg (.) ner mot backen (.) med (.) tret↑ti knop*. [we are going (.) down towards the ground (.) in (.) thir↑ty knots.] as he holds his hand with a larger angle in relation to the imagined ground. The teacher continues by telling more about the situation, describing how it could be that they find themselves in this position: *därför att ja har precis lagt (.) liksom (.) precis bara vänt runt flygplanet så här*, [because I have just (.) like (.) just only turned the airplane around like this,], as he demonstrates with his hand the trajectory of the airplane flying into the unusual attitude resulting in such a low speed. The conclusion is that in such a case reducing power is not the most important action. In the initial part of this utterance stating that there is no rush in reducing power, the student repeats with a smiley voice and face *°tretti° hh* [°thirty° hh], and in overlap with the teacher confirms the lack of urgency with regards to the reduction of power. The way that “thirty” is produced, seems to indicate that the student picks up on the question of speed, contributing to the shared understanding that it is really low.

Excerpt 15: There is no standard answer

- | | | |
|---|---------|--|
| 1 | Teacher | men: >som du säger< grundregeln är
but: >as you say< the basic rule is |
| 2 | | väl ändå den om man ska göra de lätt
still that if you want to make it easy |
| 3 | | för sej liksom att (.) a (.) nosen under
for yourself like that (.) yes (.) the nose under |
| 4 | | horisonten då (.) kan man dra av
the horizon then (.) you can reduce |
| 5 | | gasen då. °mene:° (1.1) de beror på liksom
power then. °butuh:° (1.1) it like depends |
| 6 | | (.) vilken fart man e (som sagt)
(.) on which speed you are (as said) |
| 7 | Student | a
yes |
| 8 | Teacher | de finns inget standardsvar så.
there is no standard answer like that.
((looks down at paper)) |

The co-construction of unusual attitudes is concluded by the teacher who refers to what the student has said, saying that the basic rule is that if the nose is under the horizon then you can reduce power: *men: >som du säger< grundregeln är väl ändå den om man ska göra de lätt för sej liksom att (.) a (.) nosen under horisonten då (.) kan man dra av gasen då.* [but: >as you say< the basic rule is still that if you want to make it easy for yourself like that (.) yes (.) the nose under the horizon then (.) you can reduce power then.]. It is interesting to note that he inserts the *om man ska göra de lätt för sej*, which implies that he still treats the basic rule as insufficient, and further the turn implies that there are other, more competent, ways of dealing with these issues.

While talking about the unusual attitudes, the teacher has been holding his left hand up depicting the airplane flying through the air (with the exception of when he talks explicitly about situation awareness). As the sequence comes to a close, the teacher takes down the hand and it rests on his lap. Thus the sustained positioning of the hand held up in front of his body marks the beginning and end of the activity.

Flight lesson

In this second flight lesson only two recoveries are practiced. The first one is an unusual attitude with a high nose and the second with a low nose. As focus in the analysis is on recoveries from low nose positions the first recovery will not be analysed in detail. However, a general question that is important to the analysis is raised by the student in connection with the first recovery, and is thus briefly explored.

Excerpt 16: Most important was to level the wings

- 1 Teacher så att e: [börja med att få ner nosen]
so that uh: [start by taking down the nose]
[((movement downwards))]
- 2 [å sen rätta upp da.]
[and then level.]
[((gest levelling))]
- 3 Student okej ja fick för mej förra gången att de
okay I got the impression last time that
- 4 viktigaste va rätt på vingarna först
most important was to level the wings first
- 5 men de [kanske e när man ligger neråt.]
but that's [perhaps when you're in a downwards posi-]
[((demo with hand and arm)) tion.]
- 6 eller;
or;
- 7 Teacher j-j- ja precis.=de e riktigt.
y-y- yes exactly.=that's right.
- 8 (.)
- 9 Teacher de e när man ligger neråt.
it is when you are in a downward position.
- 10 de beror ju på lite grann på situationen.
it depends a bit on the situation.
- 11 (.)
- 12 Teacher liksom v-a som e viktigast.
like wh at is most important.
- 13 Student [okej]
[okay]
- 14 Teacher pr- a- ta om de på marken sen.
t a lk about that on the ground later.
- 15 Student [a]
[yes]

When recovering from the unusual attitude the student first attempted to level the wings, something that the teacher told her not to do to instead lower the nose first. This is something that he returns to in the evaluation of and commentary on the recovery. He says that what was most important in the situation was to first lower the nose: *börja med att få ner nosen å sen rätta upp da*. [begin by taking down the nose and then level the wings then.]. The first part of the utterance “begin by taking down the nose” is demonstrated by the teacher holding his hands up and then moving them down, a demonstration that captures the movement of the airplane in the shape of the hands (they are not holding on to the controls). The second part of the utterance “and then level the wings” is demonstrated by the teacher holding on to the imagined controls and then performing the required actions to level the wings.

The student first acknowledges this with an initial *okej* [okay], which is however not produced as possibly complete. Instead it is continued by the student telling what she understood as being the proper order of actions. The teacher has been reluctant to give a specific order of actions and as we have seen during the briefing session emphasised that it depends on the situation what you should attend to. Still, this last concluding utterance, as it is formulated in a more general way and not specifically pinned down to this particular occasion, invites the interpretation of it as being a generic rule. The student says *ja fick för mej förra gången att de viktigaste va att rätt på vingarna först men de kanske e när man ligger neråt. eller?* [I got the impression last time that most important was to level the wings first but that is perhaps when you are in a downward position. or?]. The Swedish *ja fick för mej* is an epistemic stance indicating that what is “known” is an impression, and thus not claiming to be the “truth” or known for sure. Thus, it isn’t a claim of knowing the correct state of things, but rather that “something was said, and my impression of it was ...”. But that also puts the responsibility of this something that was said somewhere else than with the student, without saying so explicitly. The reference to last time refers to the last time, that is the lesson which the student did not pass. Thus, the person responsible for giving the student the impression that the most important action is to level the wings is a person known by both participants.

The issue is whether to level the wings first or lower the nose. As the student herself addresses in her question, this however might have to do with the particular unusual attitude. The “rule” to first level the wings is thus already by the student tied to an unusual attitude with a low nose position. That this is so is confirmed by the teacher. However he is

now again reluctant to formulate a generic rule, and says *de beror ju på lite grann på situationen*. (.) *liksom va som e viktigast*. [that depends a bit on the situation. (.) like what is most important.]. Situation awareness is again evoked, where this teacher emphasises that the specificities of the situation are decisive for which the action is that is most important.

Excerpt 17: That's it exactly

- | | | |
|---|---------|--|
| 1 | Teacher | .hh °okej°. <u>ta</u> en gång till. mina roder,
.hh °okay°. one more time. my controls, |
| 2 | Student | dina roder,
your controls, |
| 3 | | (9.3) |
| 4 | Teacher | okej, dina roder,
okay, your controls, |
| 5 | Student | °mina roder,°
°my controls,° |
| 6 | | (21.4) |
| 7 | Teacher | u- <u>lite</u> högre. så där ja precis.
u- a <u>little</u> bit higher. that's it exactly. |

The teacher now flies the airplane into an unusual attitude with a low nose position, and a left bank angle. He says *okej*, [okay,] followed by *dina roder*, [your controls,] and the student takes over. This time she actually responds with a soft *mina roder*, [my controls,] as she takes over the controls. She then levels the wings and starts taking up the nose. When the nose position is above the horizon the teacher says *u- lite högre. så där ja precis*. [u- a little bit higher. that's it exactly.]. The first TCU which is initiated with “u-“, and could be projected to be on its way to an “up”, is abandoned and restarted with the directive “a little bit higher”. The student responds to this with an action – she adds power. And the teacher almost simultaneously with the student's action, evaluates with a positive confirmation of her having done the right thing.

Debriefing session

In the debriefing session they talk about and problematise the relation between altitude and nose position/speed. When the speed is fifty-five knots, the yellow marker is above the horizon, even if the airplane is in fact maintaining the same altitude. In other words, you

have to scan all the instruments – nose position (the yellow marker), speed and altitude – to be able to determine whether you are climbing, maintaining the same altitude or descending. Where in relation to the horizon that the yellow marker should be depends on the speed.

This procedure is how you have to reason, and thus this teacher emphasises reasoning and the integration and interpretation of different kinds of information rather than the setting up of generic rules. In other words it is the awareness captured by the notion of situation awareness that is emphasised; that you have to make constant judgements of the information that is available to you.

Third flight lesson

Pre flight briefing session

As was mentioned in the introductory section the two first flight lessons were formally the same, whereas the third is different. The goal is still to practice flying in a glass cockpit, to a large extent focusing on the instruments. What is new is that they will do emergency training, which means that the displays will be shut down: first the *primary flight display* (PFD) in front of the student, in which case she can look at the *multi flight display* (MFD) in front of the teacher, and then both displays in which case the student will have to rely upon standby instruments located below the MFD. In other words, nothing will be wrong with the airplane *per se*. The manoeuvres are the same, but they will be performed under different conditions, i.e. looking at unusual displays. When they do the recoveries from unusual attitudes, the PFD in front of the student is shut down, and she has to look at the MFD in front of the teacher. The displays are however identical, so the main difference is that the student has to look more to the right.

The teacher presents the contents of the flight lesson as being to a large extent the same as in the previous lesson, where the difference has to do with where the instruments that you need to scan are to be found.

Flight lesson

The unusual attitudes are introduced by a review of what to do in different situations, or in other words the actual exercise is preceded by talking about it.

Excerpt 18: We begin by levelling the wings

- 1 Teacher =och om vi har $\left[\begin{array}{l} \text{låg nos istället.} \\ \text{=and if we have} \\ \text{low nose instead.} \\ \text{((demo low nose))} \end{array} \right.$
- 2 Student e: då $\left[\begin{array}{l} \text{börjar vi med å skeva upp.} \\ \text{uh: then} \\ \text{we begin by levelling the wings.} \\ \text{((demo))} \end{array} \right.$
- 3 (0.8)
- 4 Student av gas,
reduce power,
- 5 Teacher av med gasen. >precis< skeva upp.=
reduce the power. >exactly< level the wings.=
- 6 å så upptagning.
and then recovery.
- 7 Student a.
yes.
- 8 Teacher ↑bra
↑good

The teacher asks the student what the required actions are if you have a low nose. As in the classroom, the teacher demonstrates the low nose position with his hand and arm, where the fingertips correspond to the nose of the airplane. The student answers immediately *e: då börjar vi med å skeva upp.* [uh: then we begin by levelling the wings] as she demonstrates the levelling action, moving a set of imagined controls. In contrast to the other answers that the student has been producing through the lessons, and that have been rather closely fitted to the exact wording of the teacher's question, she in this answer orients to the complexity of the attitudes. An attitude with a low nose requires more than just taking up the nose, which is how she has been orienting to the question earlier. In other words, through volunteering that the first required action is to level the wings, she here orients more clearly to the complexity of the situation and what the other consequences of a low nose position might be. Further, this answer is what in the first lesson was first constructed as the correct answer (see excerpts 1-3).

There is no immediate uptake from the teacher, and the student, orienting to this as a matter of not having produced a complete answer, produces the rather minimal *av gas*, [reduce power,]. To this the teacher responds, initially repeating the last thing said confirming that it is right, *av med gasen. >precis.<* [reduce power. >exactly.<], which is then

continued by *skeva upp. å så upptagning*. [level the wings. and then recovery.]. The teacher thus establishes a sequential order in which the actions should be performed, where the first action is not as the student has suggested to level the wings, but rather to reduce power. This can be seen in relation to what happened during the first flight lesson, when a crucial error that the student was doing, was to either not reduce power at all until the teacher had said so, or being very late in adjusting the speed.

In his response, the teacher further adds something that was not mentioned by the student, which is that following the reduction of power and the levelling of the wings, is the recovery, that is, flying the airplane into a climbing position, something which requires both added power and a taking up of the nose. The student confirms, and the teacher says *↑bra* [↑good], something which concludes the reviewing part.

The teacher flies the airplane into an unusual attitude with a low nose and a left bank angle. When he says *dina roder*, [your controls,] the yellow marker on the display is just slightly under the horizon, but the nose is dropping.

Excerpt 19: You have to incorporate this reflex

- 1 (11.6)
- 2 Teacher dina roder,
your controls,
- 3 (9.6)
- 4 Teacher va gör du när vi
what do you do when we
- 5 [(.) passerar horisonten,]
[(.) pass the horizon,]
[(demo passing horizon)]
- 6 Student (full) gas.
(full) power.
- 7 Teacher full gas övergå till stigning ja.
full power transition to climb yes.
- 8 (2.5)
- 9 Teacher (för) även om du vet att vi va
(because) even if you know that we were
- 10 på tretusen innan
on three thousand before
- 11 Student a
yes
- 12 Teacher så- (0.5) måste du öva in den här reflexen
so- (0.5) you have to incorporate this reflex
- 13 att du övergår till stigning.
that you transfer to climbing.
- 14 Student okej.
okay.
- 15 (1.5)
- 16 Teacher vi kör en till;
let's do another one;

Recovering from the unusual attitude, the student follows the controls and then levels the wings. She reduces power, and starts taking up the nose – however without adding power. Further, she stops at the horizon, that is, when the yellow marker reaches the horizon on the display no further action is taken. The teacher thus asks her the question *va gör du när vi (.) passerar horisonten*, [what do you do when we (.) pass the horizon,]. As he produces the last part of the turn, after the micro pause, he gestures with his right hand an airplane climbing over the horizon. The student answers his question/directive with *full gas*. [full

power.] as she simultaneously adds power. The teacher confirms that her answer is correct through the initial repetition of *full gas* [full power] which is followed by *övergå till stigning ja*. [transition to climb yes.], which is adding on the transition to climb to the student's answer. The turn "full power transition to climb" has been repeated over and over again, reinforcing it as a generic rule.

After a 2.5 second silence the teacher expands and elaborates the question of what to do during the last part of the recovery. He says that *även om du vet att vi va på tretusen innan* [even if you know that we were at three thousand before], which is confirmed by the student and continued by the teacher *så- (0.5) måste du öva in den här reflexen att du övergår till stigning*. [so (0.5) you have to incorporate the reflex that you transfer to climbing.]. Here it is emphasised that in certain situations there are certain actions that are always correct, and that should be incorporated as reflexes. This teacher is thus not problematising the specificities of the situations, but rather finding ways of incorporating what will be automatic actions. If you have recovered from an unusual attitude with a low nose, then at a certain point of time the correct thing will be to climb through keeping the nose over the horizon and adding power. The student responds to the formulation of the generic rule with the accepting receipt token *okej*. [okay.], upon which the teacher initiates another recovery through announcing that they will do another one: *vi kör en till* [we'll do another one;].

Excerpt 20: You don't have to stop there at the horizon

- 1 (22.4)
- 2 Teacher dina roder_ɛ
your controls_ɛ
- 3 (8.5)
- 4 Teacher horisonten där ja, (0.6) bra:.
the horizon there yes, (0.6) goo:d.
- 5 (3.9)
- 6 Teacher sen får du gärna (0.7) så att säga ha
then you may (0.7) so to say have
- 7 [mer (0.3) tryck>] så att e-
[<more (0.3) pressure>] so that uh-
((gesture))
- 8 ja kan demonstrera en om du ti-
I can demonstrate one if you lo-
- 9 om du ti-ttar nu] bara.
if you lo ok now only.
- 10 Student [a visst_ɛ
yes sure_ɛ]
- 11 Teacher e:m ja kan (0.5) kopiera de läget som-
uh:m I can (0.5) copy the situation that-
- 12 (0.5) som vi hade nyss.
(0.5) that we just had.
- 13 Student a
yes
- 14 Teacher [så att (då hade vi) (.) lite halv gas.
so that (the we had) (.) half power.
- 15 (0.8) <o:ch> (0.4) här nånting fick du
(0.8) <a:nd> (0.4) here somewhere you got
- 16 rodren då va,
the controls then right,
- 17 Student a.
yes.
- 18 Teacher >märker vi< okej låg nos. av me gasen.
>we notice< okay low nose. reduce power.

19 uppskevn_{ing}. (.) upptagning. (.) i lagom
level the wings. (.) recovery. (.) at a reasonable

20 takt. (1.0) å sen håller du bara kvar den
pace. (1.0) and then you just maintain

21 här upptagningen. (0.4) å ger
this recovery. (0.4) and add

22 Student

23 (1.3)

24 Teacher e du me på hur ja menar.
are you with me on how I mean.

25 Student a.
yes.

26 Teacher du behöver inte
you don't have

27 horisonten egentligen
the horizon really

28 [utnyttjar bara (.) energin å fortsätter.
just use (.) the energy and continue.
((gesture continuing))

29 (0.8)

30 Teacher du såg hur jag gjorde där va.
you saw how I did it there right.

31 (0.9)

32 Teacher ↓märkt- märk↑te du skillnad
↓notic- did you not↑ice a difference

33 mot vad du gjorde.
from what you did.

34 Student a: ja stanna till (lite).
ye:s I stopped (a little).

35 Teacher stanna till å vänta lite.
stopped and waited for a while.

36 [å sen så fortsatte du
and then you continued
((demo))]

37 så att (0.3) de behöver du inte göra
so that (0.3) you don't need to do that

38 utan de e bara å fortsätta
instead just continue and

39 [passera horisonten.] (0.5)
[pass the horizon.] (0.5)
((demo))

40 [upp till kanske tio grader nånting.]
[up to perhaps ten degrees something.]
((point at instrument))

41 du behöver inte [höja riktigt så mycket]
you don't have to [take it up as much]
((demo))

42 som jag gjorde. (0.6)
as I did. (0.6)

43 å så [bara ge full gas istället.]
and then [just add full power instead.]
((demo adding power))

44 Student okej.=
okay.=

The teacher flies the airplane into an unusual attitude with a low nose and a left bank angle. He says *dīna roder?* [you controls?] and the student takes over. She immediately reduces power and levels the wings. She recovers the airplane, however still not adding power. The yellow marker is at the horizon, and she stops there. The teacher says *horisonten dār ja*, (0.6) *bra:* [the horizon there yes, (0.6) goo:d]. Upon hearing “the horizon,” the student adds power, taking up the nose, so that the yellow marker is slightly above the horizon on the display. The appreciative “goo:d” is done in response to the adding of power.

What now follows is an instructional part with a demonstration. The teacher says that *sen får du gärna (0.7) så att säga ha <mer (0.3) tryck> så att e- ja kan demonstrera en om du ti- om du tittar nu bara.* [then you may (0.7) so to say have <more (0.3) pressure> so that uh- I can demonstrate one if you lo- if you look now only.]. As the “more (0.3) pressure” is produced, the teacher moves his hand, palm up, slowly towards him. The issue of more pressure is clearly difficult to talk about, and embodied movements are not helpful. However, as they are in the airplane there is the possibility to instead demonstrate, which is what the teacher chooses to do. It should also be noticed that this is the kind of activity that

would not be made relevant in the classroom, or in fact anywhere else than when performing the manoeuvre in an airplane (or hypothetically a simulator), but is instead specifically tied to the situation and setting of this moment.

The teacher flies the airplane into a similar unusual attitude, that is with a low nose and a left bank angle. He talks through the recovery, starting with a noticing, followed by the required actions: *>märker vi< okej låg nos. av me gasen. uppskevnig. (.) upptagning. (.) i lagom takt. (1.0) å sen så håller du bara kvar den här upptagningen. (0.4) å ger gas? [>we notice< okay low nose. reduce power. level the wings. (.) recovery. (.) at a reasonable pace. (1.0) and then you just maintain this recovery. (0.4) and add power?]*. What he does different from the student is that he, when doing the recovery taking up the nose, does it at a regular pace and then adding power when the yellow marker passes the horizon, keeping the nose position as it is. The student has confirmed with an overlapping *okej* [okay], but the teacher pursues by asking *e du me på hur ja menar.* [are you with me on how I mean.], which is again confirmed with a minimal *a.* [yes.] by the student. Notice that the question has a preferred answer, which is “yes,” (cf. Raymond, 2003) thus making the student’s minimal response relevant, but in an educational setting also possibly unsatisfactory. That is how the teacher treats it, as he continues by highlighting the part of the recovery that she should pay attention to: *du behöver inte stanna där just vid (0.8) horisonten egentligen utan du (0.7) utnyttjar bara (.) energin å fortsätter.* [you don’t have to stop right there at (0.8) the horizon really but you (0.7) just use (.) the energy and continue.]. Stopping at the horizon is comprehensible in relation to the instruments and displays of the airplane. However, the horizon of the display is an “artificial” point of reference. There is no real line that the airplane is crossing (however, continuing with a nose that is below the horizon would of course eventually lead them to the ground). As the teacher says “to stop right there at the horizon really” he holds his hand in a way that depicts and thus highlights the line of the horizon. He ties the imagined horizon demonstrated by his hand to the one that can be seen on the display through holding his hand in front of the display, lined up (more or less) with that line. When he formulates the correct action – “just use (.) the energy and continue” – his hand is transformed into the airplane, moving through the air in a climbing trajectory. Capturing the dynamics involved in the using of energy, he redoes the climbing movement twice, pushing the hand slightly down and then up.

There is no uptake from the student, and the teacher continues *du såg hur jag gjorde där va.* [you saw how I did it there right.]. The choice of the verb “saw” is interesting as it is

oriented to what can be seen rather than for example felt. It is oriented to what can be seen on the display. With still no uptake from the student, the teacher reframes and directly asks the student whether she has noticed a difference: *↑märkt- märk ↑te du skillnad mot vad du gjorde*. [*↑notic- did you not↑ice a difference from what you did.*]. There is an emphasis on the last “you”, thus marking a contrast between what the teacher did and what the student did. This time the student responds with *a: ja stanna till (lite)*. [*ye:s I stopped (a little).*]. With this utterance, she orients to the teacher’s earlier formulation of his analysis of what she did (line 98), when he said that she doesn’t have to stop at the horizon. It is slightly reformulated but to a large extent using the same words. The teacher repeats *stanna till å vänta lite. å sen så fortsatte du* [*stopped and waited for a while. and then you continued*], which has by now been said three times. The relevant analysis of the student’s actions is thus highlighted and focused by both teacher and student.

Having targeted the problem, the teacher now adds *de behöver du inte göra utan de e bara å fortsätta passera horisonten. (0.5) upp till kanske tie grader nånting. du behöver inte höja riktigt så mycket som jag gjorde. (0.6) å så bara ge full gas istället*. [*you don’t need to do that instead just continue and pass the horizon. (0.5) up to perhaps ten degrees something. you don’t have to take it up as much as I did. (0.6) and then just add full power instead.*]. Stopping at the horizon is not required, instead the horizon should be passed. When saying the *passera horisonten* [*pass the horizon*] the teacher with his hand demonstrates an airplane passing the horizon, he then points at the display, pointing out the *tie grader nånting* [*ten degrees something*]. *du behöver inte höja riktigt så mycke som jag gjorde*. [*you don’t have to take it up as much as I did.*] is demonstrated by an almost flipping movement with his hand (still following an imagined climbing trajectory of an airplane). The *å så bara ge full gas istället*. [*and then just add full power instead.*] is demonstrated by actually putting the hand on the power lever and moving the hand as if adding power. This was the way that adding power was demonstrated in the classroom as well, however then (naturally) without access to the actual controls. The student responds with an *okej*. [*okay.*], which marks the end of this part of the sequence.

Excerpt 21: That's how it's supposed to look

- 1 Teacher vi kör en till sån där så (.)
we'll do another one like that so (.)
- 2 får du ta över sen då.
you get to take over later then.
- 3 Student a.
yes.
- 4 (10.4)
- 5 Teacher dina roder;
your controls;
- 6 (9.3)
- 7 Teacher bra; strålande. så där ska de se ut.
good; brilliant. that's how it's supposed to look.

The teacher announces that they will do one more similar recovery, which is further the last recovery of the three flight lessons: *vi kör en till sån där* [we'll do another one like that]. He flies the airplane into an unusual attitude with a low nose and a left bank angle.

Responsibility of flying the airplane is transferred by the *dina roder;* [your controls;], upon which the student looks up and takes over the controls. She reduces power, levels the wings, takes up the nose, holding the position of the nose. When the yellow marker is slightly above the horizon on the display she adds power. The teacher says *bra; strålande. så där ska de se ut.* [good; brilliant. that's how it's supposed to look.]. Notice the use of look.

Debriefing

In the debriefing session the teacher comments on the recoveries from unusual attitudes highlighting what was mainly focused during the flight lesson too, that is, the importance of not stopping at the horizon but to instead continue climbing and adding full power. What was initially difficult to say in words but where the setting in the airplane afforded the possibility of demonstration can now be drawn upon in the classroom. Maintaining *spaktryck* orients to their by now shared experience of what that is.

Other than that the teacher states that the student did everything right: *annars gjorde du helt rätt. följde med rodren. (.) uppskeivning. (.) upptagning.* [other than that you did everything right. followed the controls. (.) levelled the wings. (.) recovery.] which is

simultaneously produced with minimal gestures demonstrating the moving airplane and the required actions.

The gestures co-occurring with the verbal formulations of what to do when you have a low nose position are an interesting example of continuity as they create relations between the situations. They occur in the classroom as well as in the airplane, they are used as resources to make visible aspects of the unusual attitudes and they are sometimes minimal – but they are there as some kind of embodied remembering.

Some concluding remarks

An intrinsic difficulty with the recoveries from the unusual attitudes is that it is not really possible to formulate a generic rule that holds for every situation about what to do and in what order. Several times the teacher in the first and third flight lesson runs into problems when he is, for example, making relevant what to attend to first. Many of the descriptions of what needs to be done differ slightly one from the other. The required actions clearly depend on the specific situation.

The teacher in the second flight lesson refers to this “problem” as situation awareness. Situation awareness can put simply be defined as knowing what is going on around you. Inherent in the definition is to know what is important, in terms of the goals and decision tasks for the job at hand (Endsley, 2000). Situation awareness is a concept that derives from psychology and is primarily associated with individual mental minds that either have or don’t have this awareness. However, here we can see how the participants in interaction with each other in the most practical way deal with issues that are related to situation awareness. In the moment-to-moment constitution of situation awareness the participants rely not only upon information provided from the instruments, but also upon how it should “feel” when recovering from the attitude as well as the importance of “following” the movements of the airplane with the controls. Consequently, to learn how to appropriately recognize the implications of the situation, the student needs to develop both an ability to interpret the technologically complex environment, and an embodied “feeling” for the situation. In the briefing sessions, both of these aspects are challenging for the participants, as they are difficult to put words to. When it comes to the technological environment it is something that the participants nevertheless orient to, and in different ways reconstruct, for example by making a drawing of the displays and other instruments

on the whiteboard. When it comes to the “feeling” for the situation, this seems to be tied primarily to the experiences in the airplane. Talking in the abstract about the manoeuvre in the classroom at the briefing sessions proves to be something different than talking about it in the airplane. However, it should also be noticed, that it is the “talking about” rather than the specific material environment that proves to be challenging, as talking about the manoeuvre in the airplane is not *per se* less complicated than on the ground. However, the resources for, for example, demonstrating are considerably different in the airplane and in the classroom on the ground.

In the classroom the participants parse the activity of doing the recovery and they thus create a situation where chronological and sequential order is relevant. However, when doing the recovery in the airplane all these things need to be taken into account simultaneously. Parsing them in the way that it is done in the classroom, will in the airplane mean that you are too late, for example with adjustments of power. Instead, the analysis of the situation has to be done instantaneously.

Another related example is how the model airplane used in the first briefing session invites to seeing the airplane from an “outsider’s” perspective. Perhaps to a somewhat lesser extent this is true of the gestures taking up the perspective of the airplane (i.e. demonstrating the movements and trajectory of the airplane) too. In the airplane, radically different sources of information than seeing the airplane from the outside will be available and made relevant. For example, the instruments will be of crucial importance, where seeing the bank angle of the wings requires to be able to see things that are drastically different from seeing it from the outside. Further, an important source of information is the body, where the unusual attitudes are a very physical experience. Thus the question of what it is to know something in different contexts and with different structures in the environment available is raised. Just think of how the student could immediately identify that the proper first action was to level the wings in the unusual attitude demonstrated with the model, whereas wing position was entirely absent from her earlier answers.

I argue that there are micro-longitudinal changes in the student’s performance of the recovery from the unusual attitudes – both within the same flight lesson and over the course of the three lessons. These changes are socially established and upheld, in interaction between the student, the teacher and the airplane controls and instruments. In line with participation oriented understandings of learning (cf. Lave & Wenger, 1991), these

changes can be considered as empirical evidence of learning, and of how this learning comes about.

The student is demonstrating an increasing proficiency in the performance of the manoeuvre as well as in her ability to describe the manoeuvre in itself and to subsequently evaluate her performance of it. Learning is in this setting also a matter of silence, and that the teacher does not intervene, but that the student can do the recoveries by herself. In this sense, there is a resemblance to Martin's (2004) study, in which she demonstrates how the physiotherapy patients' learning can be described as changes in repair patterns, where in the beginning it is the physiotherapist that both identifies and repairs the problems, whereas later on the patient him/herself can both identify that something is wrong and be able to repair the problem. Knowing how to do something is to be able to do it by yourself and further identify problems with your performance and be able to correct them.

Other changes that can be noticed, is how what is problematic in the student's performance of the recoveries from the unusual attitudes gradually shifts, from the earlier stages of the recoveries to the later stages. In the beginning problems are identified in relation to her not reducing the speed. Initially that she is not reducing the speed at all, and then it is more a matter of timing and how she is late in her reactions. Towards the end, the identification of problems have moved from the former part of the recovery, to instead have to do with the latter part of the recoveries and the issue of how to pass the horizon. This thus simultaneously has to do with how the situations are related, and how we actually can see that the student indeed brings experiences from one situation into another. When we see change, we also see continuity.

Playing the game of jump rope

The activity

The sequence that will be analysed in the following is from a recording of three girls playing the game of jump rope. The girls are between 7 and 8 years old and the situation takes place during recess on the schoolyard of an elementary school.

To describe how to play jump rope is in one sense rather simple. However, both turning and jumping turns out to be quite difficult, where a high degree of coordination between the participants is required. As Corsaro and Evaldsson (1998:394) remark, cooperation is in fact a prerequisite for the nevertheless quite competitive game, where skilled jumpers are highly estimated. But to begin from the beginning, playing jump rope first requires a long rope. Two of the participants hold one end each of the rope, and turn it for a third participant that jumps. At least in theory there is no limit to how many that can participate in the game, as there can be many jumpers that take turns jumping. The normal routine is further that the participants rotate the roles of turner and jumper.

As we will see in the analysis of the situation, there are several things that are quite difficult. The rope has to be turned following a regular beat, where the turners need to be synchronised. The slightest the turners are off-beat ruins the bow of the rope and makes it difficult to jump in. Not only that, the speed, the rhythm of the beat must be well balanced – not too slow and not too fast. Further, the rope must create a regular bow shape that hits the ground and is large enough so as not to get stuck on the head or shoulders of the jumper.

To jump you have to feel the rhythm of the beat so that you jump in the right moment. One of the complexities of jumping also concerns how to begin jumping – from standing in between the turners that simply start turning the rope, or to jump in into the already turning rope. The latter is harder, as you then have to be aware of the beat, find a time to jump in when the rope will not get stuck on you and further reach the right jumping position, which is where the rope hits the ground.

In the situation that is analysed here, all these things are a matter of concern for the participants: how to turn the rope and how to jump. The participants in the part of the game that will be analysed are only three: Yasmin, Maria, and Nora.

The analysis is divided into two sections. The first part focuses on the issues of turning the rope, whereas the second part is about jumping. Within the sections the evolving sequential structure of the situation is followed, that is a chronological order.

Analysis

Part I: Turning the rope

We are now going to take a closer look at what happens when the three girls Maria, Yasmin, and Nora are playing the game of jump rope together. When we enter the situation, Yasmin has just jumped and she is taking over one end of the rope from Maria. Nora stands at the other end of the rope and Maria gets ready to jump. However, it doesn't take long until problems arise.

Excerpt 1: You can't turn

- | | | |
|---|--------|---|
| 1 | Maria | ((jumps in, the rope gets stuck)) |
| 2 | Maria | <div style="display: inline-block; vertical-align: middle;"> me_n NO:ra :.
 bu_t NO:ra :.
 ((turns toward Nora)) </div> |
| 3 | Nora | <div style="display: inline-block; vertical-align: middle;"> vad[↑]å:.
 wh[↑]a:t. </div> |
| 4 | Yasmin | <div style="display: inline-block; vertical-align: middle;"> du kan inte sno : ju.
 you cannot tu :rn xx. </div> |
| 5 | Nora | <div style="display: inline-block; vertical-align: middle;"> >de kan ja visst< de
 >sure I can< </div> |
| 6 | Maria | a men nu provar ja ig [↑] en
yeah but now I'll try ag [↑] ain |
| 7 | | å [↑] ja kollar på <Nora> den här gången.
and [↑] I will look at <Nora> this time. |

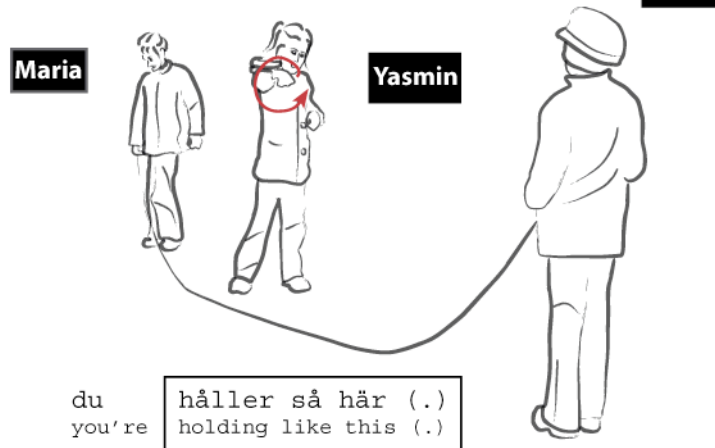
Maria jumps in, facing Yasmin. It is not going to be even one jump. When the rope gets stuck on her, she quickly turns around toward Nora as she says “but Nora”. Nora answers Maria with an emphasised *vad* ↑ *ä*. [wh ↑ *ä*.] upon which Yasmin declares that Nora can’t turn the rope. Nora immediately and strongly protests through saying >*de kan ja visst*< *de* [>it can I for sure<], thus challenging both Maria’s and Yasmin’s claims. At this time what more specifically is wrong with the way Nora is turning the rope is not specified, and instead the exchange is brought to an end through Maria pursuing the game. She proposes that they jump again, i.e. that the activity should proceed. However, she also adds that she is now going to face Nora as she jumps.

During these few seconds in the very beginning of the girls jump rope game the tone for how the game will proceed is set. When Maria fails in jumping, she immediately turns it into a question of Nora being the cause of the problem. Yasmin acquiesces, and corroborates Maria’s interpretation of the situation through specifying that Nora is doing something wrong and she also identifies the problem as being that Nora can’t turn the rope. To be able to turn is, as we have already stated, a competence that is an absolute prerequisite in order to participate in the game. Through her utterance Yasmin positions herself as the one who knows how to do things and further as the one who has the right to decide whether the other’s are doing it the right or the wrong way, that is that she takes up the role of a judge. Further Nora is constructed as being the one in need of control in order for her to do it the right way. Maria formulates it in words: *a men nu provar ja ig* ↑ *en* *å* ↑ *ja kollar på* >*Nora*< *den här gången*. [yes but now I will try ag ↑ ain and ↑ I will look at >*Nora*< this time.]. She then turns around toward Nora for a next try at jumping, and thus claims that she has to watch over and control Nora and her actions. This in turn implies that Nora will have to prove that she is able to turn – that it’s not enough that she verbally says she can.

A little while later (approximately 1 minute 20 seconds) the turning of the rope is once more oriented to, this time not only mentioned but also elaborated upon.

Excerpt 2: You are holding like this (.) a little

- 1 All [elva
eleven [tolv
twelve
- 2 Yasmin [ [((the rope stops))
- 3 Yasmin mä .h de däre: de var lite fel.
but .h that it was a little wrong.



- 4 du håller så här (.)
you're holding like this (.)
- 5 °lite grann.°
°a little.°

When the rope gets stuck Yasmin immediately refers to Nora doing something wrong, through her way of holding the jump rope when she turns it. She demonstrates with her hand high up in the air how Nora is turning in a, according to Yasmin, wrong way. In this particular situation Yasmin's critique might seem somewhat awkward. However, let us look at what happened just before, when Maria was jumping.

Excerpt 3: The art of turning a jump rope



1. The rope initially follows a regular shape, where the movements of Nora and Yasmin are coordinated.



2. Nora pulls her arm high above her head, a height that is further reinforced by Nora being taller than Yasmin.



3. Maria jumps in and Nora pulls her arm back, something that stretches the rope too much.



4. Maria is preparing to jump. Yasmin's arm is stretched out to the side, whereas Nora still has her arm over her head. Nora's movements take considerably longer time than Yasmin's.



5. Maria jumps. Yasmin bends forward, pulling the rope down toward the ground to compensate for Nora's high and slow movement.



6. The rope has the shape of an S and Yasmin's and Nora's movements are not synchronised. Nora's arm is above her head while Yasmin is bending forward for Maria to be able to jump.

Turning the jump rope is not working well. It is crucial to have the rope move in a regular bow that hits the ground enough to make it possible to jump. Further, a regular rhythm – not too slow and not too fast – must be followed for it to be possible to jump. To turn the rope in a way so as to satisfy these requirements, it is in principle enough to move the hand and parts of the arm that you are holding in front of your body. Nora's

movements are big. She is using her whole arm, moving it in big circles. When Maria jumps, Nora further pulls her arm back behind her body, something that stretches the rope so much that it will not hit the ground if the person at the other end of the rope doesn't do something to compensate the movement. Yasmin is doing precisely this. She bends forward and has to use her whole arm to get the rope to hit the ground. Nora's big movements also take a considerable amount of time to complete, and Yasmin at the other end has to push the rope down so it's possible to jump. Pretty soon they are no longer in synchronisation, and it is not possible to jump.

Already early in the situation Nora was criticised by Maria and Yasmin for her inability to turn the rope. This criticism has been expressed in terms of simply stating that Nora "can't turn", and sometimes a bit more specific, but still mitigated: *de var lite fel. du håller så här* (.) *°lite grann°*. [that was a little wrong. you're holding it like this (.) °a little bit°.], where the deictic *så här* [like this] is tied to a demonstration of how Nora holds her hand too high up in the air while turning the rope. However, the way Nora is criticised escalates through the sequence although the content of the criticism doesn't change. What begins as a way of demonstrating through highlighting an aspect of the movement that the participants interpret as being wrong, is as time passes transformed into an exaggerated demonstration of each other's movements.



Once again turning the rope is topicalised. Again it is Nora who is found not to be able to turn the rope in a correct way. This time however, not only Nora's actions are highlighted but the other participants' actions too. Thus a suite of demonstrations are done, where an "ideal" way of turning the rope is oriented to.

Excerpt 4: You should do like she is doing

- 1 Yasmin: så hä:r. ((demonstrates))
like thi:s.
- 2 Maria: ja gör ju så hä:r. ((demonstrates))
I'm doing like thi:s.



- 3 Yasmin: a man ska göra så där som hon gör inte-
yeah you should do like she is doing not-



- 4 Maria: inte så hä:r.
not like thi:s.
- 5 Nora: ja gjord:e inte så dä:r.
I didn't do: like tha:t.
- 6 Maria: JA JA JA MEN NU ÄR DET .hh HONS tur
YEAH YEAH YEAH BUT NOW IT'S .hh HER turn
- 7 å hoppa för hon kan inte.
to jump beacuse she can't.
((snatches rope from
Nora's hand))
- 8 Yasmin: nej jo ja kan visst.
no yes I can.

- 9 Maria: men hon kan inte göra re här.
but she can't do this.
- 10 Yasmin: men: (.) du får [bara (.) du har en
but: (.) you can [only (.) you have one
((pointing at Nora))
- 11 Maria: [(Nora) här
(Nora) here
((throws rope at
Nora's feet))
- 12 Yasmin: chans kvar [å sen (.) så kan=
chance left [and then (.) you can't=
- 13 Maria: [ja å sen får du (gå)
yeah and then you can (go)]
- 14 Yasmin =du inte snö: mer.
=tu:rn any more.
- 15 Maria: e[n två å tre
o[ne two and three
- 16 Yasmin: [så får du (°°sätta dig°°)
then you can (°°sit down°°)]

Yasmin initially demonstrates how Nora is holding her hand too high up when she turns the rope. This very much resembles what is analysed in the last excerpt. However, this time Nora's actions are further contrasted with Maria's. Maria, who is at the other end of the rope, demonstrates how she turns the rope, with small movements in front of her body co-occurring with the verbal turn *ja gör ju så här*. [I am doing like this.]. Yasmin, who upon hearing Maria's utterance turned around toward Maria, turns back facing Nora and corroborates that: *a man ska göra så där som hon gör inte*- [yeah one should do like she is doing not-]. As she produces the major part of the verbal turn, she first demonstrates how Maria is doing it the right way, turning an imaginary rope in front of her body. Yasmin then, as she says *inte* [not], moves her arm up in the air, again depicting Nora's movement. In talk and gesture, she thus builds a contrast between right and wrong, between Maria and Nora.

Further building on this contrast, Maria completes Yasmin's verbal turn *a man ska göra så där som hon gör inte*- [yeah one should do like she is doing not-] with a *inte så här*. [not like this.]. Yasmin's verbal turn has been prematurely abandoned, before it has come to possible completion. Through the grammatical construction of the turn – a turn-

constructional unit that has a compound format – it projects that a comparison (what to do vs. what not to do) is under way (cf. Lerner, 1991:453). Lerner (1991:453) writes that the organisation of turn-taking “requires an orientation to projected unit completion by recipients. This requirement then provides the resources for the production of a recognizable completion by a recipient”. The import of the collaborative completion in this specific situation, is that it emphasises the creation of a two-against-one situation, where there are two participants that position themselves as “knowing” versus one that stands rather alone. The collaborative completion of the demonstration reinforces the differences in status.

Maria’s verbal completion, and more importantly the co-occurring gestures and demonstrations, the way that she moves her body demonstrating how the rope should not be turned, is an escalation. She thrusts her straight arm round in big circles and her whole body is involved in the movement. To the outsider looking at the activity, there are hardly any similarities with how Nora is turning the rope and Maria’s demonstration, and the gestures are instead ridiculing. This can be compared to how Yasmin – in an imitating yet more restrained way – has demonstrated how Nora is holding her hand high up as she turns the rope.

When Maria and Yasmin demonstrate how to turn the rope, they refer to an ideal where the arm is to be held rather still with the hand rotating the rope in small movements. In this sense they are relating to an ideal way of turning the rope, an ideal way that does not necessarily have very much to do with the performed actions.

Further, in depicting Nora’s problem in turning as a question of holding the rope too high up, one aspect of the way she is doing it is highlighted, and neither of the demonstrations directly corresponds to how the reported actions were performed.

Up until now Nora has not responded to the accusations that Yasmin’s and Maria’s demonstrations represent. Upon Maria’s exaggeration, however, Nora responds with denial – she protests emphatically to the demonstration, and she says *ja gjord:e inte så dä:r*. [I didn’t do: it like that]. She thus makes relevant that her actions are exaggerated in the imitations.

Nora’s denial leads to an escalation of the conflict. The demonstrations proper are over for this time. Maria discards Nora’s denial, and with a considerably higher pitch turn-initially, says *JA JA JA* [YEAH YEAH YEAH]. The repetition of the word *ja* [yeah] marks a refusal to take up the challenge she has been presented with by Nora’s denial of her

demonstration. And of course she is simultaneously discarding Nora's objection. Further, Maria is pushing the action forward orienting toward a continuation of the game – a position that she often takes in the sequence as a whole. As a consequence of Nora's claimed inability to turn the rope, she continues: *MEN NU ÄR DET .hh HONS tur å hoppa för hon kan inte*, [BUT NOW IT'S .hh HER turn to jump because she can't.]. Simultaneously as she produces the *kan inte* [can't], she snatches the rope from Nora's hands. Nora has up until now never been allowed to jump, and Maria's proposal that Nora take the position as jumper is an unexpected turn to the development of the situation. Yasmin seems unclear as to how to interpret Maria's action, and answers *nej jo ja kan visst*. [no yes I can.]. The initial *nej* [no] could be interpreted as marking a misalignment with Maria's proposal, but then she seems to orient to the utterance as in some way claiming that *she* is the one who is incapable of some kind of action, and instead she defends herself.

When this happens, Maria has walked up to Nora, taken the rope from her and handed it out to be taken by Yasmin. When Yasmin protests, who???? during the initial parts of Yasmin's turn is facing her, changes her body position and instead faces Nora, as Yasmin comes to completion of her turn. Maria insists on her earlier claim of Nora's incompetence and objects *men hon kan inte göra re här*. [but she can't do this]. As she produces the emphasised *hon* [she], addressing Nora in third person, she makes a "throwing" movement with her arm towards Nora. As she does this she quickly looks at Nora, but it's else remarkable how Yasmin and Maria are clearly oriented toward each other, with Nora standing as a passive onlooker to what the other's are doing. In other words it isn't only the references to Nora in third person, but also how Yasmin and Maria are positioning their bodies toward each other, that excludes Nora.

What should also be noted, is that Maria is orienting towards a continuation of the game. With her discarding *ja ja ja* [yeah yeah yeah], and the however in the situation surprising proposal that Nora should jump, this is nevertheless a pragmatic solution to the problems that they are facing. Further it's part of the rules of the game that you should take turns jumping and turning, rules that have constantly been broken. Yasmin proposes a different solution. Instead of backing up Maria in her proposition that Nora could jump, she further reinforces the critique of Nora through threatening her. When starting up her utterance *men: (.)* [but: (.)], she is initially looking at Maria. Then, as she continues *du får bara (.)* [you will only get (.)] she changes her body position, turning towards Nora. Simultaneously Maria turns toward Nora and in overlap with Yasmin throws the end of the rope at Nora's

feet as she says (*Nora*) *här* [Nora here]. Yasmin walks up close to Nora, pointing her finger in Nora's face in a disciplining movement stating that Nora now has one more chance to participate in the game and to show that she can turn the rope – or she's out.

The demonstrations are an important part of how the situation develops where the issue of how the actions *were* performed and how they *should be* performed display stances taken toward the person whose actions are reported. And as we will see in the next example, it's very much a question of whose interpretation is the right one – not right in an absolute sense, but whose interpretation that gets built upon and corroborated by someone else.

The first point to be made is how crucial it is, in order to understand what the girls are doing, to take into account not only verbal language but also their embodied actions in an environment. In the examples analysed here, the girls are for example constantly using deictics to refer to different embodied actions, actions that would be opaque were we not to consider how they are being done. Elaborating on and stretching the distinction between indication and demonstration that Clark and Gerrig (1990) argue, the deictics indicate actions, whereas the embodied actions are doing the demonstrations. This is not to say that the one could be either done or analysed without the other, but that the reported actions gain their powerfulness through these different layers of talked and embodied action.

Further, several layers can be discerned in the demonstrations. The reported actions claim to be reporting what the other person has done. In so doing they are relating to an ideal way of turning or jumping. They are sometimes depicting the worst possible way of performing the action, picking out one aspect of how it had been performed, and sometimes the ideal in itself. How much of the original action that is in fact reported, varies. In other words, the demonstrations are oriented towards both the other person's action and simultaneously they display an ideal (both in positive and in negative terms). Thus, the demonstration is not necessarily tied to the actual performance of a jump or a turn, but it also displays knowledge of an ideal way of performing the action. As we have seen, the girls are through the nonverbal actions able to clearly demonstrate to each other what the right way of doing this might look like. In this way they can contrast the wrong way with the right. However, this display of wrong and right is not neutral. When reporting one another's speech or actions the girls are not just reporting, but the voice of the reporter can also clearly be heard (cf. Goffman, 1981, Goodwin & M. Goodwin, 2004). The reporting demonstration is strongly taking up a stance either aligning or misaligning with the action. The girls exploit the possibility of reinforcing the contrast between what is right and what

is wrong through exaggerating both ways. And in this sequence, the demonstrations are intricate tools in the exclusion of one girl from the others and from the game. The “agreed-upon” wrong always coincides with something that Nora has been reported doing.

In this example of reported action then, whether the report is indeed a correct report or not, is an issue. However, as the original action is no longer accessible to the participants they have no way of controlling the report, or corroborating their interpretations. The “truthfulness of the versions” is disputed but cannot be settled by any other means than the participants agreeing upon which one is the correct one. And the correctness, turns out to have very little to do with the original action *per se*, but instead with the alliances formed between the girls.

Immediately following upon the prior example OBS INTE! is a second episode of demonstrations. Maria and Nora have just begun to turn the rope. Yasmin prepares to jump.

Excerpt 5: It's you that are jumping like this

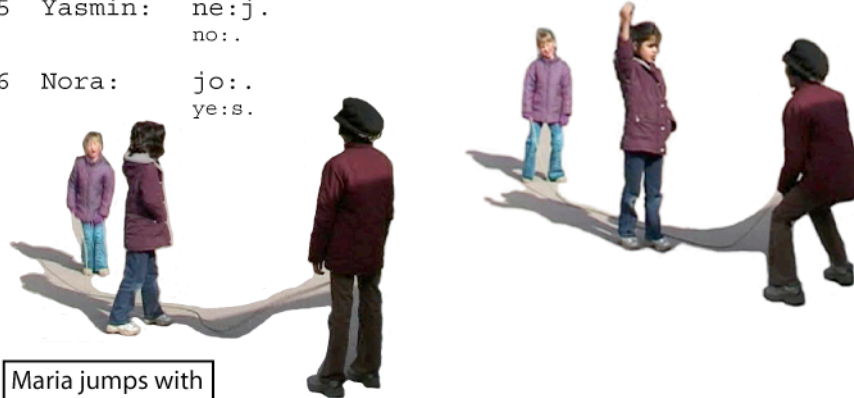
((Maria and Nora turn the rope when it gets stuck on Yasmin))

- 1 Yasmin: me kh du hăl ler så himla lå-
 bu kh you're hol ding so very hi-
- 14 Nora: de e du som hop par
 it's you that are jum-ping

så här.
 like this.

Nora jumps with her feet wide apart

- 15 Yasmin: ne:j.
 no:.
- 16 Nora: jo:.
 ye:s.



Maria jumps with her feet together

- 17 Maria: så här hoppade hon.
 she jumped like this.

- 18 Yasmin: ja så här.
 yeah like this.

- 19 Yasmin: .hh ok ej.
 .hh ok ay.

Yasmin imitates Maria's jumps

- 20 Maria: E:N TVÅ: Å TRE
 O:NE TWO: AND THREE

- 21 Yasmin: å tre
 and three

((They turn and Yasmin jumps eight jumps))

When the rope gets stuck on Yasmin she immediately turns toward Nora to criticise her way of holding the rope too high. But this time Nora counters and challenges Yasmin. In overlap with Yasmin, projecting that the same critique as before is about to come, she accuses Yasmin of jumping the wrong way: “it’s you that are jumping like this”. Upon producing the last deictic “this”, Nora demonstrates how Yasmin has jumped with her feet

wide apart. By countering the accusation, Nora succeeds in shifting the focus of attention from herself, to Yasmin. First of all Yasmin abandons her utterance before completion: “bu kh you’re holding so hi-“. Second, her hand that she has been holding high up in the air demonstrating how Nora holds the rope, drops down and she puts it back into her pocket. Third, as Yasmin has protested to Nora’s reporting of her action by rejecting it with a “no:”, Maria initiates a demonstration of how Yasmin according to her jumped with her feet together, jumping lightly up and down.

Nora counters Yasmin’s protesting “no:” by saying “ye:s”. Up until now Yasmin has been facing Nora all the time, and she hasn’t seen what Maria is doing. Maria now says “she jumped like this” as she continues jumping and Yasmin turns her face towards her and can see what she is doing. Just as when she demonstrated how she herself turns the rope displaying an ideal way of performing the action, she is here demonstrating how to ideally jump. This ideal is in stark contrast to the jump Nora reported, where she heavily jumped into a position where her feet were wide apart with bent knees.

As in the first example, Yasmin now ties to Maria’s actions, and she imitates her way of lightly jumping with her feet together, verbally confirming “yeah like this”. In contrast to the first example the matter is here settled. In this second example Nora instead of denying the correctness of the accusations has tried another strategy – she counters with a report of the incorrectness of Yasmin’s way of jumping. She does succeed in shifting the focus from herself to in this case Yasmin, and she forces Maria and Yasmin into a defensive rather than offensive position. However, against the two girls collaboratively working to establish what versions of the reported actions that are the correct ones, Nora is powerless. Maria starts counting in a loud voice, Yasmin prepares to jump, and the game is once more taken up.

Part II: Jumping

To this part the collection and analysis is not at all ready ... I decided to keep the part in the manuscript, as it shows you something of what the situation looks like.

Maria is now going to jump in to the rope while it is being turned. She is not sure of how to do it, and first she stands on one side of the turners to then run to the other side. When she comes to the other side she asks the turners to change the direction in which they are turning the rope, something that they for different reasons do not attend to.

Maria eventually jumps in but immediately gets stuck in the rope. She has stopped to jump too early, and has thus never reached the right jumping position.

Excerpt 6: But you're so far off in that direction

- 1 Maria: ahä: de e bara å börja snurra (.)
 [andra sidan (.)
 [[((runs around to the other side))
- 2 Maria: måste byta ((demonstrates with her hand
 that they should change directions))
- 3 Nora: ((tries to change direction))
- 4 Yasmin: men ↑GÖR då Nora ((Yasmin continues in the
 same direction as earlier))
- 5 Nora: ja:. ((Nora turns in the same direction as
 Yasmin))
- 6 Maria: ((jumps in and the rope stops))
- 7 Yasmin: men du e så hi[m*la långt ↑ditåt
 [[((points))
- 8 Maria: ja: *h↑är då:,
- 9 Maria: här?
- 10 Yasmin: å sen så ska du- [=
- 11 Maria: [[((the rope stops))
- 11 Yasmin: =meh du hh (.) du är hÄR när du ska hoppa
 då måste vi göra så (.) (så att de blir)
- 12 Maria: ja men v↑ar nånstans då,
- 13 Yasmin: du ska s[tå *där
- 14 Maria: [här;
- 15 Yasmin: ne:j (.) du ska (.) °hoppa in°.
- 16 (Maria): E:TT
 ((they turn the rope and Maria jumps in,

*the rope immediately gets stuck))

17 Yasmin: m[eh hh (.) du [e så [hã:r du gör-]
 [((walks toward the "jumping place"))]

18 Nora: [(du står [här du) står]
 [((runs toward the "jumping
 place"))]
 *här nä[r ru]=

19 Yasmin: [a:]

20 Nora: =kommer in

21 Yasmin: så [gör du så *där=
 22 [((turns the rope in big movements
 around her back, demonstrating how it
 gets stuck))]

23 Nora: =ja:

24 Maria: a men var ska ja stå ra.

25 Yasmin: du ska st[å-

26 Nora: [men asså nä- nä- nä hopp↑repet
 kommer så:*= ((starts demonstrating with
 hand and rope))

27 Yasmin: =då ↑gör du då gö*-

28 Nora: när hopprepet kommer så hära (.) så ()
 iställe* för å [(.)] hoppa över
 [((jumps))]
 de så där så hoppar[ru
 [((jumps))]

29 Yasmin: *°a°

30 Maria: (nehe:) men ja står här. ((stays in the
 middle))

31 Yasmin +
 Nora [°°ett [två å [tre°°
 [((on)) [((on)) [((turns))]

32 Maria: ((jumps and immediately gets stuck))

Yasmin points with her whole arm, holding the arm straight out, pointing at a place “distant”, far out. Maria, who has just gotten stuck in the rope, is initially looking down. The pointing arm reaches it’s farthest when Yasmin says *himla* [“very”]. When producing *ditåt* [in that direction], the arm is already back in its home position, in Yasmin’s pocket. Maria who has been looking down towards the ground when Yasmin has been talking, is

undoubtedly facing Yasmin when she says *ditåt* [in that direction], which is when she is no longer pointing. It is unclear how much of the pointing that she has seen, what is clear though, in terms of participation frameworks, is that she is not clearly orienting to what Yasmin is saying and doing, in that she is not making herself available in a clear way. She is moving, around. When Yasmin starts her utterance Maria is standing with her back toward Yasmin. When producing the *himla* [very] with her arm stretched out, Maria has turned around so that she is now standing with her right side toward Yasmin, but still her face is tilted down toward the ground, and further she is busy stepping over the rope. It seems that as Yasmin is withdrawing her arm, Maria turns her face toward Yasmin, to be looking directly at Yasmin as Yasmin's pointing arm is in the pocket, and the utterance has reached its final *ditåt* [in that direction]. However then Maria does turn around in a pirouette-like movement, then stepping backwards to get ready to jump in again.

However this is what is happening in its details, there is no real focus of attention. Nora is just standing there. Yasmin is commenting on Maria's actions, and Maria is getting out of the jumper's position where she has gotten stuck in the rope and is preparing to jump in another time. The pointing gesture is not very specific, compared to for example the pilots pointing at a specific feature on the computer screen in front of them, or the Goodwin archaeologists pointing at a specific feature in the ground of which they are going to trace the outlines.

This is not to say that Maria hasn't heard (or seen) what has been going on. She orients to the instruction, and she says *ja: h ↑är då:* [ye:s h ↑ere the:n] which is then a way of first explicitly saying that she has heard that Yasmin has said something, and through the *här då* [here then] she is orienting to it as a question of where she is to stand, where she is to be positioned.

However, she gets no immediate response to this. Yasmin and Nora are again turning the rope. Maria repeats the *här* [here] and starts running toward the turning rope to jump in. Yasmin answers her turn with a *å sen så ska du-* [and then you should-], which is however never completed as Maria has already jumped in and got stuck in the rope. This utterance points to future actions, about to tell what Maria is going to do next. However, as the moment when it is appropriate to talk about future actions is past (when Maria jumps in and gets stuck), Yasmin cuts off, and continues on something that is instead commenting on what Maria did. *Very unclear ...*

Yasmin explains where Maria is when she is going to jump, a position that is so far away from the jumping position, that she is not able to jump if the turners don't take special action.

Maria makes the same mistake as last time and the rope gets stuck. Yasmin now walks toward the "jumping place" to show Maria what she means, as she simultaneously says "meh du e så här". Nora now comes in and takes over and explains what is right and what is wrong and how what is wrong should be remedied.

Once more Yasmin begins to explain and show Maria that she must jump farther in the bow, so that she jumps between the two turners. Almost at the same time as she does this, Nora too moves towards the "jumping place" and shows where Maria is wrongly jumping and she says that "du står du står här när ru kommer in". Yasmin continues, confirming Nora's utterance and says "ja så gör ju så där" (?), as she shows that the rope gets stuck when you jump there, something that Nora quickly confirms with a "ja".

Maria asks where she should stand; "a men var ska ja stå ra", which means that she is accepting that she is doing something wrong, and that she now wants to know how she is to do instead, thus accepting the other two as authorities and the ones that 'know how things should be done'. Yasmin starts up an answer to Maria's question where she simply says "du ska stå". Having come this far, she is more or less interrupted by Nora, who now starts an utterance in which she will develop both how Maria has been doing up until now and how she should do it instead. Nora does this through telling with words and demonstrating how it should be done. Yasmin has already explained to Maria where she should stand, explanations that have not helped Maria. Nora tells and demonstrates in a slightly different way how and where Maria should jump. Nora shows that she must enter the rope in a different way and that she, as Yasmin has tried to show her, must jump into the position between Nora and Yasmin. Yasmin supports Nora's instruction and confirms what Nora has said with a weak "a". Maria does not jump in again, but decides to start from the jumping position – "men ja står här".

Goodwin *et al.* (2002) analyse a similar example, where an account is added to the protests from the other players in the game. "This account describes what the move should have been and what the violation consisted of. Through the intersection of multiple semiotic resources, the player is instructed in the appropriate way to move her feet through the grid." (Goodwin *et al.*, 2002:1629). They further write: "What emerges in this example is a fully embodied opposition move produced through gestural, intonational, and

verbal admonishment. Not only is Paula told about the inappropriateness of her actions, but also the girls physically move her body, instructing her in the appropriate size of steps to take. Such forms of multi-modal turns occur throughout the girls' adversarial moves as girls provide accounts making explicit their positions of opposition." (*ibid.*:1630).

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