Evidence of Distorted Communication as Impetus for Use of Strategies to Achieve 'Something Like' an Ideal Speech Situation

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ABSTRACT

This paper seeks to analyze the intersubjective nature of students' interactive utterances. The analysis is based on three episodes within a groupwork context from a qualitative case study focussed on the adoption of aspects of Complex Instruction in a Year 7 mathematics class. The analytical framework uses Habermas's Theory of Communicative Action (TCA). This analysis allows for a fresh perspective on the importance of equity, and equitable teaching practices, such as those embodied in Complex Instruction, in the establishment of a space for discursive problem solving.

Introduction

> In what way is it possible to establish mathematical learning that might support the development of mathemacy? It is no way a given that this question can be answered in any clear and satisfactory way, but it stays as a concern of critical mathematics education. (Skovsmose, 2005: 47)

In this paper I analyze the small group interactions of one group that, while it managed to have some good ideas, engaged in patterns of interactions that were difficult to characterize as equitable and free from coercion or the use of power. This example of the way in which different

needs and backgrounds of students can present challenges to the use of mixed-ability groupwork begins to indicate some of the overlapping challenges of teaching mathematics using groupwork. The cognitive demands of learning and teaching mathematics exist simultaneously in the same space as the power and positioning demands of identity formation and maintenance. The boy was 'Acting Out'. The boy may have learning disabilities, and certainly does not have the fluency with spoken and kinaesthetic mathematical practices that the girls in the group have and it seems probable that the boy is positioned as having low ability and low confidence in mathematics.

Is this related to the link between poverty and attainment in mathematics? Perhaps not directly, but it is interesting to note that the boy may be identifying and being identified as 'working class' and his resistance and perceived lack of ability may be related to this. The link that I am suggesting is that the macro and meso analyses of the role of mathematics education in the stratification of perceived ability and the exclusionary practices of education which relate to global features of economic and social ghettoization (Skovsmose 1994, 2005) play out on a micro level too. If this argument is convincing it indicates a need to act strategically in order to preserve necessary preconditions for communication in the mathematics classroom. These preconditions are concerned with equitable opportunities to participate in the absence of coercion.

The Episode Analyzed

The episode of utterances analysed in this paper is from one group's interactions in a lesson about patterns of factors in integers. Ms Phelps[1] is a teacher at Ridgeway School, an urban secondary school with 600 students and medium/high rates of socioeconomic status (SES) deprivation (indicated by the school's data from the Department of Education website in 2009), and GCSE performance of 39 per cent (5+ A*–C, including English and maths). The lesson is with a Year 7 class in the first half of the summer term of 2009. In this case study research, I collaborated with participating teachers to develop 'groupworthy' tasks for use in Complex Instruction approaches (Cohen, 1986; Boaler, 2006) with which the school was experimenting. After designing the tasks I engaged in participant observation as

[1] Pseudonyms are used for all names of participants and schools.

an additional adult assistant to the classroom teacher (Ms Phelps), while also collecting video and audio data of each group's interactions using small flip cameras on the tables.

In the episodes of interactive utterances analyzed in this paper the task was focussed on factorization patterns using rectangles with integer dimensions. The introduction to the task was clear and Ms Phelps spent about fifteen minutes setting up the task and being explicit about what the students were to investigate. The two main points she made were: (1) that students were to investigate only rectangles with integer side lengths; and (2) that she wanted them to count rectangles as distinct that differed only in orientation (thus a 3cm long by 1cm wide and a 1cm long and 3cm wide rectangles would both be counted). There was a question regarding whether squares were rectangles, which Ms Phelps turned back to other members of the class before stating clearly that squares were a special type of rectangle where the side lengths were equal.

A Case of an Excluded Boy: Issues of Alienation and Resistance

The following episode and analysis reflects the issue of alienation based on ability labelling and identification. In this episode a boy, Oscar, is explicitly labelled as 'not being able to understand it' and this is seen as justification for him not to be included in the group interactions around the task by other students, the teacher and the boy himself. Analysis of this episode shows how the student that is most vocal in the interaction, Megan, positions Oscar quite forcefully as not able. Oscar participates at first, following directions from Megan, but gets frustrated quickly, perhaps by the tone and content of Megan's comments, and starts acting in ways that can be interpreted as resistance to participating in interactions around the assigned task. Instead Oscar starts fooling around, first in seemingly insincere responses to Megan, and then by changing the conversation to a social one about dating. Throughout the course of the rest of the groupwork time, Oscar is on-task only when a teacher is directly observing and interacting with him, and even then it is clear that he has not been following the work and interactions of the other group members.

How are we to analyze this? Megan is quite frustrated by Oscar's behaviour, but Abigail seems to be somewhat entertained and interacts in a friendly way despite sometimes making jokes about how little he listens or pays attention to the classwork. Megan goes as far as to say, 'You know

what, I'm so glad that the teachers know he's a pain in the butt . . .' to the other group members.

However, this issue can be analyzed using the Theory of Communicative Action as it is essentially a set of exclusionary practices that deny one student access to participation in communication to varying degrees and thus undermine the conditions for communicative understanding. In mathematics teaching the pervasiveness of ability labelling and the use of hierarchical levelling in the assessment of students are already recognized as problematic (Knapp et al., 1995; Cooper and Dunne, 1998; Linchevski and Kutscher, 1998). However, what the perspective of communicative action reveals is that these kinds of communicative moves may interfere with students' participation in the practices that could allow them to develop their identities as competent students of mathematics. By creating conditions where the contributions of some are seen as less worthy, one student, Oscar, is excluded and discouraged from participating in the back and forth which entails the potential for communicative understanding.

'Systematic distortion' of communication is a useful frame for the analysis of the small-group data in this study. Developing an analysis of distorted communication in classroom group-work interactions could point the way towards further research that examines the connection between wider social issues and the practices of the classroom. This kind of analysis is beyond the scope of this paper, but I suggest that its potential is indicated by this analysis.

This example of the 'boy who was excluded' also reveals the way in which the concept of systematically distorted communication is used to interpret transcript data. In this example the boy, Oscar, had developed a habit of resisting the identity positioning focussed on him by acting out socially. I interpreted this as an intentional strategy to avoid participating in the interactions that reinforced his identity as not being able. In the episode below (Figure 1) we see the display of identity conflict result in unproductive exchanges. These interactions show two things, first the exclusionary moves around Oscar's perceived ability, and secondly the way in which Oscar chooses to resist through resorting to social gossip and engaging others in distracting 'play' type interactions.

Before the excerpt below took place the teacher, Ms Phelps, had taken the class through an extensive whole-class interaction around what the task entailed. As the group starts to work independently around the task, Megan takes control right away. In the excerpt we see Megan directing Oscar. She then proceeds to criticize his efforts and he becomes defensive.

Figure 1

Megan: Have you filled in the bit in the middle?

[Oscar continues to manipulate the markers]

Megan: The bit in the middle, not the bit on the outside.

Oscar: This is [unclear – very focussed on manipulation of counters].

Megan: You can write it on a bit of . . . um – Abigail [getting attention of Abigail].

Megan: He can write it on a piece of paper, but when it comes to use the things, he can't do it!

Megan: Oscar–Oscar–You-did-it-on-a-piece-of-paper. [Syncopated tone as before – circling Oscar's previous work as she says it; Oscar is focused on counters not making eye-contact.]

Megan: [repeating and circling previous work continuously] You-did-it-on-a-piece-of-paper.

Oscar: Yes-I-know! [Looking up and making eye contact. Speaking in almost similar syncopation – bit defensive?] There we go [gestures to counters]. Now I'll show you a proper one [wipes the counters into a pile and starts counting again].

Megan: What was the rectangle that you did on the piece of paper?

[Oscar makes the four by five arrangement of counters that reflects the work that he had done earlier.]

Megan: OK, pass them to Abigail and see if she can do one.

[Oscar gathers up the counters and moves them towards Abigail.]

Oscar: OK.

Megan: See if you can do one, Abigail.

Oscar: Be a good girl, Abigail.

Megan: Make sure you have twenty.

[Off-task playing with the camera – Megan takes camera and sets it down.]

Megan: OK, Oscar, can you do another one for me?

Oscar: No. Yeah.

Megan: Because you did the four by five – do you want me to do one?

Oscar: No, I want to do one – I'm a big [button?]!

Megan: Yeah – whatever you say, Oscar. [Sarcastic – but friendly?]

[Some other talk that seems interesting but is too unclear to interpret.]

[TA comes over and gives them more counters and moves Abigail next to Oscar; all three are now focussed on making arrangements of counters.]

Megan: What's that?

Oscar: Four by six.

Megan: Is that <really> twenty?

She speaks to him slowly as though he were a small child. At first he does not respond and then he responds clearly in a defensive manner, using some rather unsubtle sarcasm. This use of sarcasm seems to be a response to Megan's condescension. At the end of this episode we see Oscar take one parting shot, saying 'Be a good girl, Abigail', which seems to be a kind of mockery of the directing attitude of Megan. Oscar is able to do some of the things that Megan directs him to do, such as construct a rectangle with certain dimensions, but quickly becomes frustrated and distracted and begins responding to Megan's directions with social talk. There is a slight transition into silliness, and then some inappropriate posturing (possibly bullying-type behaviour), which is followed by a teaching assistant (TA) intervening and getting the group focussed back on discussing the task at hand.

This next excerpt (Figure 2) is from the same episode a few minutes later. Oscar is off-task and has not been paying attention to the ideas that the others have been having. Megan is trying to explain the idea that the group has come up with. The exchange with regards to behaviour is very telling, as is the more or less blatant lack of reference to the ideas developed by others in the group in Oscar's responses to Megan's questions. In Figure 2, Oscar makes a statement that emphasizes the claim that his behaviour is normatively correct. This is a suspicious claim, but the other members of his group do not directly challenge him on it. Abigail makes a wry comment, which could be interpreted as a challenge to Oscar's claim. Oscar does not respond to the comment and focusses his body language at Megan. His body language now suggests he is paying attention to Megan and he is, in a way. Despite the fact that his responses to Megan bear no sign of his having noticed or understood the work done by others in the group, Oscar engages with Megan in a sort of initiation response evaluation pattern (IRE), quickly figuring out the answer that Megan was looking for in her very discrete closed questions. He then re-emphasizes the normative correctness of his participation in the last line of the excerpt in Figure 2. The claim is no less suspicious at this point than it was the first time Oscar emphasized it.

But Megan is not going to let Oscar off the hook for these claims. In the next section she tries to expand her questioning to see whether Oscar understands the pattern that the others have identified (that the number of different rectangles possible under the conditions of the task is equal to the number of factors of the integer area). Oscar does not rise to challenge and it becomes unclear what either Megan or Oscar may be referring to. In the

Figure 2

Megan is trying to explain the conjecture the group has come up with:]

Megan: We still have to think about this. OK, so four factors has four rectangles . . .

[While Megan is speaking Oscar starts throwing some of the counters. Abigail, the girl sitting directly to his left, is messing about a bit too and interacting with Oscar socially a bit. Hannah, off-camera to the left, throws some of the counters back at Oscar. Oscar glances away (presumably at one of the teachers who may be noticing the horse play) and says 'What are you doing?' [in a mock indignant manner], and then starts to 'pay attention' to what Megan is saying].

Oscar: . . . yeah four rect-four squa-four sides . . . [Looks away from Megan to his left, then straightens up and looking further into the distance, says:]

Oscar: I'm not, Miss! [Pause, turns back to Megan] I'm listening . . . four rectangles . . .

Abigail: For once [amused].

Megan: Equals . . .

Oscar: . . . equals . . . a square!

Abigail: [A look of confusion comes over her face, followed by a silent 'What!?' and shaking head, looking back and forth at the other two group members.]

Oscar: . . . equals a bigger rectangle!

Megan: Four factors equals . . .

Oscar: . . . a rectangle.

Megan: [Pause] How many?

Oscar: [Quietly] Four?

Megan: Well done.

Oscar: Told you I listened!

excerpt in Figure 3, a shift in social positioning takes place. This shift takes the form of Oscar shifting the conversation to one of relationships. This puts Megan on the defensive, especially when Oscar mentions that Megan went on a date with a boy named Harry Smith. Hannah gets interested in what Oscar is saying and the whole conversation (the one about the mathematical task, that is) is headed for derail until Abigail forcefully steps in to curb Oscar's inappropriate comments. The conversation becomes one about relationships for a few minutes until a TA comes over and intervenes, but is less confrontational and involves all the members of the group.

The episode continues beyond the end of Figure 3 and the group is able to articulate and record the idea about a pattern that they developed from investigating the integer area rectangles. Most of the productive group interactions occur when a TA or the teacher, Ms Phelps, is present. At the end of the groupwork time Megan and Oscar are engaged again and she asks him to explain the idea of factors in the context of the task (where the factors were the lengths of the sides of the integer rectangles). Oscar uses his own words referring to the side-lengths as lines and gesturing – the answer is not great to be fair, but Megan hammers him for his mistake, again. This is another example of the ability positioning that is related to Oscar's exclusion from the communicative action that led to the ideas developed by the group.

Figure 3

Megan: Two factors?

Oscar: Uh, eight fifteenths rectangles.

Megan: One. [Severely, also incorrectly.]

Oscar: Which has two in it.

Megan: No. [Severely.]

[Abigail pokes Oscar's arm with a round plastic counter.]

Oscar: See?! She cut me! [Holding up arm which got poked.]

Megan: I don't care.

Oscar: Do you know what [unclear] is?

Megan: I don't care.

Oscar: You're in love with Billy Smith.

Megan: No, I'm not.

Oscar: Who do you love then?

Megan: No one.

Hannah: She's in . . . what?

Oscar: She went out with Harry Smith.

Abigail: OSCAR LIS-TEN!!

Hannah: Did you? [In tone like 'oh-really?']

[The conversation goes on a bit about relationships of different people not in the group until a TA comes over and intervenes around group roles.]

Oscar is being excluded from the communication, and he is also excluding himself. He doesn't use effective strategies for mitigating the negative power positioning within the academic discourse but rather resorts to schoolyard gossiping and posturing (potentially bullying-type behaviour). The girls in the group respond to this reasonably well, but there is much less communication going on about the mathematical task. I was acting as a participant observer in a TA role in this lesson (alongside Ms Phelps and the TA mentioned earlier). I intervened to check for group understanding of the task at one point in the lesson, and found that Oscar was unable to follow the ideas that the other girls were presenting. When I tried to engage the students in working with Oscar to make sure everyone in the group understood the ideas they were coming up with, Abigail said, 'But he doesn't really care, so . . .' and Megan said, 'He doesn't listen anyway', which is perfectly true, and it seems as though this lack of what Skovsmose (1994) might call an 'intention-to-learn' has effectively positioned Oscar outside of the school-mathematics discourse. The interplay of power and identity between students in groupwork is not unusual, though this example is particularly stark.

Systematic Distortion of Communication and Colonization of the Lifeworld

Originally employed as a way to negatively explore a concept of communicative competence, systematic distortion was a concept that Habermas emphasized less as he developed his mature Theory of Communicative Action and the concept of colonization of the lifeworld. However, it is still useful to consider in that it explicitly deals with the relationship between ego-identity and communicative action. Considering how understanding may be undermined or fail on the level of individual participation in social interactions is a vital perspective to consider with regard to the analysis of school learning, and especially with regard to school learning of mathematics, which is often characterized by low rates of participation and attainment, and widespread and persistent negative personal narratives. In systematically distorted communication, participants employ strategies of communication that prevent the achievement or maintenance of intersubjective understanding.

In his earlier thinking, Habermas approached the idea from a psychoanalytic perspective. He suggested that in some family situations where there was an uneven distribution of power identity, conflicts can

impact on the internal organization of speech such that conflict is avoided through various strategies of self-deception (Habermas, 2002). While this paper does not examine family situations, the argument for the relevance of this psychoanalytic perspective is that the forms of rationality that are developed in family relations serve as foundational models for rationality in other social settings, including schools. I will briefly discuss a few of the strategies to be able to note the importance of these ideas in educational settings generally, and to be able to show how they relate to Habermas's broader ideas of the systematic colonization of the lifeworld.

From this psychoanalytic perspective, as articulated by Habermas (2002), ego-identities are developed and maintained in the context of family relations (primarily – but also in other social arenas). The issue of 'securing one's identity' is addressed by Habermas. Without addressing the details of his argument I want to note two issues. First, when identity management in social groups breaks down (and this can happen in a number of different ways), identity conflict ensues and in a symptomatic situation where these conflicts cannot be worked out discursively, the 'pressure of identity conflicts is shifted onto the internal organization of speech where it is stabilized, but remains unresolved' (ibid.: 164). And secondly, that there are communicative strategies, such as joking and irony, that may mediate power relations so as to 'clear the ground for discourse' (ibid.: 162).

Addressing the first in slightly more detail, in an attempt to penetrate its opacity and understand its implication for educational analysis from a communicative perspective, I note that the communicative disturbance resulting is such that instead of being able to reach intersubjective understanding, participants act towards each other in 'thinly veiled strategic fashion' (at least when the pretence of consensual participation is still required). This is an interesting idea which suggests that a participant may find it necessary to participate in a dysfunctional community in order to secure and maintain their identity. However, due to some systematic distortion, the mutual recognition of validity claims that would be characteristic of properly functioning intersubjective situations may only be possible through the tacit violation of one or more of these validity claims (ibid.: 164). An example of this is the establishment of pseudo-consensus such that consensus appears to be maintained but in fact communication is flawed due to the avoidance of addressing validity claims. This can be done in a number of ways, which basically boil down to a participant not giving a legitimate answer when a validity challenge is made.

This is all rather abstract, but examples from classroom practice are not hard to imagine: class-clown behaviour in the face of teacher or peer task-focussed questions; idle off-topic chatter that persists even in the face of repeated attempts by teacher or peers to engage in task-oriented conversation; silence/non-participation; ignoring the interlocutor; and so on. This may sound a little negative; however, I would suggest that the negativity stems from Habermas's strategy for investigating conditions of communication. Furthermore, the aim here is not to blame the students, or in fact any of the participants. Habermas is describing a *systematic* distortion of communication.

The colonization of the lifeworld is another concept developed by Habermas describing the negative effects of a diminishing lifeworld. In this model the lifeworld, which acts as a reservoir of intersubjective meaning through communicative action, becomes dominated by the strategic action of the system. Since according to Habermas's theory the logic of strategic action is based on the logic of communicative action, the colonization of the lifeworld results in effects which begin at the local level of the lifeworld and then cause the system to stagnate and potentially fail. The symptoms of colonization of the lifeworld are called social pathologies,[2] and include:

1. Decrease in shared meanings and mutual understanding.
2. Erosion of social bonds – disintegration.
3. Increase in feelings of helplessness and lack of belonging – alienation.
4. Consequent unwillingness to take responsibility for their actions and for social phenomena – demoralization.
5. Destabilization and break down in social order – social instability. (Finlayson, 2005)

These pathologies are related potentially to important understandings of mathematics education such as learning in the form of shared meaning and mutual understanding and feelings of helplessness and lack of belonging, which addresses the issue of identity formation. In this section we will explore these ideas (systematic distortion and colonization of the lifeworld)

[2] The use of the term 'pathologies' harks back to the psychoanalytical approach of systematic distortion of communication which he developed originally and which is related to the concept of the colonization of the lifeworld.

and apply them to the analysis of the breakdowns of communication in the data from this study.

What are the implications for mathematics education from these concepts? If, in certain circumstances, we can see teaching and learning as the cultivation of the rationality inherent in communicative action in the service of developing mathematical knowledge and practices within society, then the implication of evidence of communicative breakdowns, both locally and systematically, is that such cultivation may fail or proceed in an ineffective manner. An important intersection between situated theory, as articulated by Wenger (1990), and Habermas (1987) in the Theory of Communicative Action is the parasitic dependence of the system on the meaning-making that occurs within the lifeworld (or within 'communities of practice' in situated theory). The negative implication is that the system's tendency to interfere with the conditions for communicative action in the lifeworld through over-regimentation is essentially undermining the system itself. Two ancillary questions are implicated: 'Is the meaning-making occurring in mathematics classrooms within the realm of the (or a) lifeworld?' and 'What is the connection between the everyday rationality of the lifeworld, the rationality of the discipline of mathematics, and the rationality of the system (and in particular the institutional settings in which mathematics education and mathematics reside as disciplines)?' These questions are beyond the scope of this paper, but the conceptual framework of Habermas's TCA may allow for the connection of the theory developed in this study to be related to addressing these questions in further research.

The episodes examined in this paper seek to explore some ideas about why evidence of distorted communication may be significant. The threat to the development of non-pathological ego-identities can be found in the concept of systematic distortion of communication, and the threat to non-pathological social integration can be seen in the concept of the colonization of the lifeworld. I suggest that these two realms of development (the social and individual), which are interconnected and vital in the field of mathematics education, can be understood as related to the moves being made in small group interactions.

The analysis in this paper so far has sought to suggest that there are important technical features at the micro level of analysis of students' interactions in groupwork in mathematics classes. Further, I suggest that these may be related to larger social issues regarding attainment and participation in mathematics education. Clearly this claim would require further research and analysis. However, considering the potential links between ideas of systematically distorted communication (in mathematics education) and colonization of the lifeworld (in mathematics education), I argue that there is good reason to pursue strategies that create and promote situations in which communication can take place in an uncurtailed fashion.

Habermas (2002) asserts that there must be an equal opportunity for all participants to choose and perform any speech acts in order to engage in communication where the development of mutual understanding is achievable. The importance of this is the assertion that if such an ideal speech situation could be designed, it would feature an equal distribution of opportunities to employ: 'communicatives' such as speaking, responding, asking questions, and giving answers; and 'constatives' such as interpretations, assertions, explanations, or justifications. This is pertinent for analyzing the extent to which classroom strategies that attempt to establish equitable norms can be interpreted as creating (or emphasizing) the conditions for meaningful communication. This argument addresses directly design features of a situation in which communication, and particularly 'validity-discourse', could take place.

Given that there is the potential for distortion of communication in small-group learning of mathematics, I suggest that establishing classroom norms and practices informed by features of the 'ideal speech situation' as conceptualized by Habermas may lead to more effective learning, all other factors being equal. In this way teachers and teacher educators could take action to create conditions in which their students could break free of the distorting and colonizing forces at play in society and begin to realize their potential as students who can understand mathematics.

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