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The Forum

# "You Can Make a Tower": Using Conversation Analysis to Understand a Math Tutoring Session

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A recent article in the *New York Times* (Spencer, 2011) described a series of well-attended workshops on how to encourage children to play effectively with wooden blocks. At first glance, the idea of teaching children to play seems somewhat absurd. And yet, if we think about learning *via* play rather than learning *to* play, it is reasonable to ask how adults can encourage mathematical and verbal complexity in children's games and activities. By looking closely at what parents and teachers say to children during play sessions, we can perhaps better understand the kind of language that supports intellectual development in the context of child-directed play. In this brief paper, I attempt to show how one teacher uses language to bring together learning and play in a math tutoring session. Specifically, I discuss an instance where the teacher finds a moment in a student's self-directed game where it would be appropriate to introduce beginning math concepts. In order to better understand and depict the tutor's talk, I use Conversation Analysis (CA) to study how the interaction unfolds on a moment-by-moment basis. CA's emphasis on how each turn unfolds — and relates to preceding and following turns — allows me to look closely at the pedagogical implications of seemingly minor choices on the part of the tutor.

The data in this paper are from a math tutoring session that took place in a private home. The student in the session (Chloe) is 3 years, 4 months old. The tutor (Pauline) has been teaching for over 40 years; her areas of expertise include one-on-one teaching, and the development of number sense in young children. Throughout the session, the tutor made use of objects such as poker chips, game boards, large plastic dice, and plastic pegs that can fit together. The session was filmed with two video cameras; one on a tripod, and one handheld flip camera. I viewed the video data multiple times, and then transcribed and analyzed key extracts, including the interaction described below. As the extract begins, Chloe and Pauline are playing with multi-colored, stackable plastic pegs (see Image 1, below).

**Image 1: Making a Tower with Pegs**

**Excerpt 1: You can make a tower**

| | | | |
|---|---|---|---|
| 1 | C: | | ((*picks up one peg and starts to put it on top of another*)) |
| 2 | P: | → | Yeah you can make a tower. |
| 3 | C: | | (2.8) - ((*continues making tower*)) |
| 4 | P: | | Yeah if you hold it with {((*holds tower with one hand*)) - one hand} at the same |
| 5 | | | time as you push it with the other hand= |
| 6 | C: | | [((*adds a blue peg while holding tower with one hand*))] |
| 7 | P: | | =[>there it goes< ] |
| 8 | P: | | Blue:: one. |
| 9 | C: | | (2.4) ((*continues making tower*)) |
| 10 | P: | → | I saw someone (.) once make a tower just as tall as she was. °see how tall it |
| 11 | | | goes. There you go.° Are you gonna put em all in a ↑tower? |
| 12 | C: | | Yeah. |
| 13 | P: | | $ok we'll see if it goes$. Maybe I'll hold it at the bottom for you to see- hol- so it |
| 14 | | | doesn't fall down. |
| 15 | | | (.) You stick them in and I'll hold it. You're gonna have to stand up soon in order |
| 16 | | | to be able to get them ↑in there. Oop! Maybe you better stand ↑up. |
| 17 | C: | | (3.0) ((*continues making tower, first standing on knees, and then standing up*)) |
| 18 | P: | → | [Almost. Look it comes to the letters on your belly. See.] |
| 19 | C: | | [((*continues making tower*)) ] |
| 20 | P: | → | Now it's almost up to your chin °not ↑quite but it will be soon° (.) Is it up to |
| 21 | | | your ↑chin yet? |
| 22 | C: | | (4.6) ((*continues making tower*)) |
| 23 | P: | | °Let me see.° I wonder- Oop. I better start- don't you think I maybe- I should |
| 24 | | → | hold it in the middle too? °doesn't fall down° it's gonna be taller than you are |
| 25 | | | Chloe::. |
| 26 | C: | | (1.4) ((*continues making tower*)) |
| 27 | P: | → | It's up above your head now:: ((*sing-song voice*)). |
| | | | 33 lines omitted: C and P discuss the mechanics of building a tower that is taller than Chloe (will she stand on a chair? ask her mother to help?) |
| 28 | P: | → | Chloe goe:s (.) right up (.) to:: ((*puts hand on top of C's head*)) the:: >green one! |
| 29 | | | Right here. (0.2) Step away and go see. |
| 30 | C: | | ((*steps back and turns towards P and tower*)) |
| 31 | P: | | ((*hand remains against tower at height of C's head*)) That's how tall you are. You're |
| 32 | | | as tall as the green one right there. |
| 33 | C: | → | ((*points to the peg just above the green one P has been marking*)) I'm this tall. |

Throughout this excerpt, Pauline makes no attempt to guide Chloe's actions. Even so, as I watched this clip, it was clear to me that Pauline was acting in the role of a teacher. When I looked more closely, I realized that Pauline's verbal descriptions of Chloe's actions were shaping the way she and Chloe understood the activity at hand — Pauline seemed to be teaching by narrating.

This excerpt begins as Chloe takes one peg and stacks it on top of another (line 1). The tutor's response to Chloe's non-verbal conduct is to describe it: she says "Yeah, you can make a tower" (line 2). Then, as Chloe continues to add pegs (lines 1 through 9), Pauline makes a subtle shift in her narration. She introduces the idea of measurement, and of comparing the height of two objects, when she suggests that it is possible to make a tower as tall as a person (line 10). In line 11, she asks if Chloe plans to use *all* the pegs. This seemingly simple word holds a wealth of

pedagogical meaning, in that it suggests that the chips can be seen as a set or group, rather than as unconnected discrete objects— a complex idea for a child of Chloe's age.

Pauline goes on to describe the tower itself: "It's almost up to your chin" (lines 17 and 18), "It's taller than you are" (line 21), and "It's up above your head now" (line 23). Here again, Pauline's narration of Chloe's play provides a mathematical focus for activity. By comparing the tower to Chloe's body, Pauline shows Chloe concretely that the tower can be measured, and that two objects (tower and body) can be compared in terms of height. After a few more minutes of building, Pauline again measures Chloe's height against the tower (line 24). Finally, in line 29, Chloe essentially disagrees with Pauline's measurement, pointing to a certain peg and arguing that she is taller than the line Pauline marks off with her hand. These verbal and non-verbal actions suggest that not only does Chloe, too, define the activity as *measuring*, but that she also understands a fundamental point: a place in the physical world (a peg) can stand for her own height.

Interestingly, there is no evidence that either Chloe or Pauline believe that they have stopped playing. The fact that the activity occurs in a living room rather than a classroom and that the objects involved are toys both contribute to the playful atmosphere. We also see Pauline using playful language, when, for instance, she refers to Chloe in the third person, and uses slightly exaggerated intonation in line 24: "Chloe goes right up to the green one!" It is Pauline's careful use of language that allows her to accomplish the work of teaching, within the context of a playful interaction. That is, by saying something as simple as "Now it's almost up to your chin" (line 17), Pauline is both stating a physical reality, and saying to Chloe: *We are engaged in measuring a tower*. *Physical objects can be measured.* Similarly, asking Chloe if she is "gonna put them all in a tower" (line 24) is both a question about Chloe's plans and a way to explain to the child that the chips can be seen in terms of a complete set.

In this brief analysis, I have tried to show that focused narration of a child's actions can help a child think mathematically about their own play. Using CA allowed me to uncover the complex pedagogical and interactional functions of utterances that, on the surface, seem simple. It is perhaps inevitable, when analyzing institutional talk, to start with preconceived ideas about participants' roles and objectives. This may be particularly true in cases when the relationship between interlocutors is based not just on institutional identities such as teacher and student, but also on other factors; e.g. adult and child. However, CA asks us to study interactions and participants on their own terms—to look at the talk itself for clues about "what (it is) that's going on here" (Goffman, 1974, p. 8). For instance, while we might typically assume that the teacher (and the adult) in a tutoring session would make decisions about how a lesson unfolds, a conversation analysis of the session described above showed the young student making decisions about how to engage with the objects at hand. The teacher, however, is able to use her talk to create a learning environment even as she seemingly cedes control to her student. This fine balance between giving agency to a student and remaining pedagogically connected is something I have seen many novice teachers struggle with. I hope, then, that along with offering some insights into how one experienced tutor works with young children, these findings also suggest how useful CA can be in analyzing the realities of institutional discourse.

## REFERENCES

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