A review of the research of E.G. Mishler, H. Mehan, and others suggests that a unified theory of the mechanics of how continuous discourse is accounted for in classroom behavior is necessary for further study. Discourse analysis meets the criteria for selection of a theoretical framework because it deals with all the language within the classroom from a universal point of view. Defining the basic unit of classroom language as the independent clause or T-unit, it is possible to generate four basic categories of classroom interaction: the informative clause, the elicitation, the directive, and the boundary marker. Classroom interaction is divided between teacher and student, with teacher structures to inform, direct, or elicit, and student structures to inform or elicit. Rules can be generated for successive interaction sequences, maintaining the option of the teacher to persist or desist in a line of questioning as crucial, and it is possible to typify macrostructures using this system. (A coded sample of student/teacher dialogue is appended.) (AEA)
A Discourse on Discourse Analysis

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San Francisco, April, 1970.
Introduction

The selection of a theoretical framework is a lot like the purchase of a horse or an automobile. The prospective buyer is looking for two things: economy and power. Although this audience may not be familiar with the purchase of an automobile, they can nonetheless follow my analogy by considering the purchase of a horse suitable for plowing. If we are going to purchase a plow horse, we will accept a fairly large creature; but we will not necessarily buy the largest quadreped we can find. Size in a horse implies power, but it does not necessarily follow that the largest is the best. The balancing consideration in the purchase of a good plow horse is economy: One does not wish to purchase an animal that will eat more than it will produce. The analogy can now be turned to a consideration of theoretical frameworks. One wants a theory that has power, that is, a theory that covers all appropriate cases completely and discriminates those cases that are not appropriate. The ability of a phrase structure rule in a transformational grammar or the adequacy of a taxonomic category in biology would be two examples of power. The phrase structure rule must be capable of generating all desired phrases without permitting any ungrammatical phrases. The taxonomic classification must include all creatures appropriate to the genus or phylla or species, and exclude all creatures not having similar morphologies. One solution to power in a theory is to build the theory so large that no possible case can be missed. Essentially, the theory can grow to the
point where it is a listing of the phenomenon \textit{in toto}. Thus the constraint of economy is applied in the test of theoretical frameworks. The test of a theoretical structure is whether or not it accounts for the phenomenon in the most judicious fashion. In this discussion of the use of discourse analysis in the description of classroom language, the questions that need to be answered are: does discourse analysis have theoretical power and does it economically describe the phenomenon?

Before addressing the questions of theoretical economy and power, it would be useful to discuss the phenomenon itself: turn-taking sequences in classroom language. Mehan (1978) argues that there are topically organized segments of lessons that are larger than simple interactions between teachers and students. This observation is not especially new. Much earlier, Smith and Meux (1962) developed the notion of the teaching \textit{episode} as an interactive series of utterances between a teacher and his or her pupils around a common topic. They differentiated among the types of episodes on the basis of the frequency and diversity of student responses and on the logical basis of the teacher's initial utterance. Subsequently, Nuthall and Lawrence (1965) used these types of categories to develop the notion of the \textit{cycle} as a sequence of episodes that has a formal structure. Cambourne (1971), using the technique of textual reconstruction, developed the concept of the \textit{exchange} which is nested within the \textit{encounter}. For Cambourne, exchanges
are the sequentially and temporally related utterances of a single speaker. His categorization of encounters is basically similar to the distinction made by Smith and Meux regarding episodes. Bellack et al. (1966) observed that one type of teaching structure was most likely to be followed by another identical type of teaching structure. This work has since been replicated by Lundgren (1972) in Sweden and Power (1971) in Australia. Prokop (1974), using computer-analyzed strings of Bellack-coded transcripts, concluded that sequential processing provides much more meaningful information on instructional processes.

What makes Mehan's (1978) position unique is that he argues for the dynamics of the structure and not for the structure itself. Mishler (1975a, 1975b) argues for a "stochastic" model of interaction, that is, one which can be described as a series of sequential probabilities as Bellack et al. (1966) had done earlier and Kluwin (1979) has done recently. Mehan argues for a macro-structure that would permit the description of the teacher's behavior over several interactions. Maintaining that, "... teacher-student interaction does not appear to be under immediate stimulus control," (P. 58) he proposes that a generative model would be a more accurate description of the phenomenon.

There is considerable evidence to dispute Mehan's claim. Garvey (1976) in a description of adult-child interactions describes solicited and unsolicited contingent
queries. The contingent query is based on Garvey's contention "... that in discourse not all speech acts are created equal. A certain act may dominate a sequence creating a domain of structure and meaning." (p.68) She argues strongly that speaking turn distribution is related to the role that a previous speech act has established. She even points to Chafe's (1972) work on the semantic constraints placed on subsequent dialogue by the verb. Other work in studies of elliptical sentences in extended discourse (Holtzman, 1971 and Gunter, 1963) indicate that there can and are very close ties between responses to questions and the immediately preceding utterance. There is even some limited experimental data (Hurtig, 1975) to suggest that clausal level processing accounts for much of the information required for the interpretation of conversations. Mchoud (1978), while trying to demonstrate the rational basis for the intuition that classroom language is a highly formalized situation, demonstrated the importance of immediate stimulus control, in the form of speaker turn- relinquishing behavior, over classroom dialogue. What seems reasonable in regards to Mehan's position is the assertion of overall dialogue control since as Holtzman (1971) has argued there are a number of situations in which immediate linguistic context is insufficient to account for the relationship between utterances. The untenable part of Mehan's argument is that discourse sequencing is not under immediate stimulus control
at least to some extent.

The Mehan-Mishler debate invites comparison to the debate between American structuralist grammarians and transformational-generative grammarians during the early sixties over the nature of the phenomenon which they both sought to describe. In reality that debate was a wrangle over the descriptive adequacy of the two systems and not the nature of the phenomenon. Mishler (1975a) attempted to account for the sequencing of successive questions in terms of a generalized mathematical model while Mehan (1978) wanted to talk about an overriding organizational principle. Mehan's discussion of the teacher-question—student-response—teacher-reply cycle in terms of immediate constituents only heightens the similarity between the two debates, Mishler, like the American structuralists, thinks in terms of the micro-unit of analysis. Mishler's "morpheme", if you will pardon the alliteration, is the individual question. From his point of view the approach is to combine the sequences of questions into blocks. Like the structuralists he is able to nicely account for "morphemes" or strings of immediate constituents but is unable to give an overall account for the mechanism that would generate the string in the first place. Thus Mehan steps in and tries to establish some kind of general principle. Using anaphoric reference in discourse as the argument, he projects forward towards longer strings like the transformationalist who writes a two item rule that has theoretical power to be
expanded into an indefinitely long string. Mehan tries to strengthen his argument by pointing out how a series of elicitations can "cycle" through several utterances. One is, of course, forced to ask if the ability to maintain a thread over disconnected events is the result of the power of the linguistic principle or of the tenacity of the teacher. That question aside, the issue that still must be confronted is the mechanics of how continuous discourse is accounted for in classroom behavior.

While Mishler (1975a) offers a neat mathematical approach with all the appeal of the pure scientific paradigm, Mehan (1978) is closer to the mark when he suggests that there is some overall controlling principle accounting for "cycles." The question that now faces us is how to account for Mehan's organizing principle in a single unified theory. Mehan (p. 47) presents a basic structure for a classroom lesson but one that fails to meet his own criteria, in fact, it seems to fall a little short of even Mishler's. In a unified theory of classroom behavior, each unit should be related necessarily to every other unit in the system both horizontally and vertically or paradigmatically and syntagmatically. To answer these questions, we turn to discourse analysis.
Discourse Analysis

While it might be desirable to immediately describe the structure of an entire lesson, that seems a little ambitious without first describing the more primitive structures of the system first. For the sake of discussion, we will define the basic unit of classroom language as the independent clause or T-unit. We must deal with a meaningful unit and this seems like a satisfactory starting point.

The unit of analysis that meets the requirements of intention, well-orderedness, and convention is most frequently a full clause. There are exceptions to this as Sinclair and Coulthard (1975) and Wiener (1976) have pointed out. Certain words or phrases, often highly idiosyncratic, function as boundary markers or as elliptical sentences under certain structures. For example, "okay" or "alright" depending on their position within an interaction can be used to signal the start of a question, directing, or informative clause or can be a neutral or a positive response to a previous statement. The particular lexical items comprise a relatively small set that can vary from teacher to teacher but the behavior itself is fairly ubiquitous. In a fully formalized theory these words could easily be represented by functional markers and personal preference could control the selection of the speaker appropriate sub-set of terms.

Now that the unit of analysis is defined, it is time to
develop a comprehensive theory. To do so, it will be necessary to generate four basic categories. To begin with, let us deal with the problem of truth. The basic unit that we will describe is a clause that asserts the truth of some existant or an informative clause. If truth can exist, then a clause that seeks to establish a truth relationship between two propositions would seem to be a logical second category, thus an elicitation needs to be basic unit. Thirdly, a truth proposition can be turned into a call for action: a directive. The fourth category is philosophically an ugly duckling but linguistically crucial. A category is required which will mark boundaries between other units. From these four units it is possible to develop a comprehensive theory of classroom interaction.

The next problem to consider is the next unit of analysis. Since we now have our "morphemes", what is the "sentence"? For this we select an obvious physical measure: the individual speaking-turn. Since an individual speaking-turn may be made up of a single word or several clauses, the advantage of our proposed system is obvious.

The next unit to be described is the interactional sequence that Mehan (1978) mentioned. Sacks et al. (1974) must devise an elaborate system for describing turn-taking in normal conversation, but Sinclair and Coulthard (1975) do not find such an elaborate system necessary for describing turn-taking in the classroom. The answer can be found in Gumperz's (Gumperz and Heras Michuck, 1974)
discussion of social relationships being considered as communicative symbols. While Mchqud (1978) uses Sacks et al.'s conventions, this seem a bit overdone for the phenomenon. Duncan (1972) is able to locate multiple and complex turn exchange behaviors, but Sinclair and Coulthard (1974) do not require a complex systematics for classroom discourse and Weiner (1976) and Kluwin (1977) describe a considerably enfeebled system of turn-taking markers. Status relationships within the classroom negate much of the systematic complexity that Sacks et al. require. The Sacks et al. system is an attempt to describe all conversational turn-taking regardless of the participant status. Because the teacher has some conversational control, although Mehan (1974) accurately points out that it is a negotiated control and not an absolute control, the systematics of classroom turn-taking are much simpler. The systematics are sufficiently uncomplicated to require only two specifications to distinguish turn-taking within the classroom: teacher and student. Table 1 below presents a basic set of structures for the interactional sequence.
### Table 1

#### Turn Structures of Classroom Sequences

<table>
<thead>
<tr>
<th>Initiator</th>
<th>Intent</th>
<th>Turn Structure</th>
<th>Sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>teacher</td>
<td>inform</td>
<td>opening, (answer)</td>
<td>Teacher Inform</td>
</tr>
<tr>
<td>teacher</td>
<td>direct</td>
<td>opening, answer, (follow up)</td>
<td>Teacher Direct</td>
</tr>
<tr>
<td>teacher</td>
<td>elicit</td>
<td>opening, answer, (follow up)</td>
<td>Teacher Elicit</td>
</tr>
<tr>
<td>student</td>
<td>inform</td>
<td>opening, (answer)</td>
<td>Pupil Inform</td>
</tr>
<tr>
<td>student</td>
<td>direct</td>
<td><strong>null set</strong></td>
<td><strong>null set</strong></td>
</tr>
<tr>
<td>student</td>
<td>elicit</td>
<td>opening, answer</td>
<td>Pupil Elicit</td>
</tr>
</tbody>
</table>

Teacher inform sequences occur when the teacher is passing on facts, opinions, ideas or information. Teacher direct sequences are those where the teacher's intent is to get the student to do something, usually something physical. Teacher elicit sequences attempt to obtain verbal responses from students, primarily to establish what information the other participant possesses and not to respond to a lack of information the questioner has. Pupil elicit sequences and Pupil inform sequences are not merely student questions or statements, but formalized sequences where the student must first get the teacher's attention, establish a right to interact, and then speak.

Some sequences are bound topically and structurally to a
previous teacher elicit sequence. Four types of bound sequences can be described on the basis of the student's responses to the teacher's question. If the teacher gets no response, she can make another attempt by repeating her question or by paraphrasing it. This will be categorized as a Re-initiation 1 (R-1). If the response is correct, the teacher may still elicit more of the same type of response by using a head-nod or simple marker as a response. This will be called "listing" (List). If the teacher is uncertain of the student's response, she or he can ask the student to "repeat" the response. The teacher's treatment of the student's response as incorrect produces the Re-initiation 2 exchange (R-2).

Table 2

<table>
<thead>
<tr>
<th>Structures Contingent on Teacher Elicitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>response</td>
</tr>
<tr>
<td>acceptable</td>
</tr>
<tr>
<td>continue → List</td>
</tr>
<tr>
<td>stop</td>
</tr>
<tr>
<td>perceived → R-2</td>
</tr>
<tr>
<td>not perceived → Repeat</td>
</tr>
<tr>
<td>unacceptable</td>
</tr>
<tr>
<td>stop</td>
</tr>
<tr>
<td>continue → R-1</td>
</tr>
</tbody>
</table>

[diagram of the structures shown]
Continuing with the structures just described, it is possible to concatenate from the basic three turn interactional sequence to larger units. Again, the question of intent must be considered. If the teacher wishes to continue along the same topical lines, several options are open. If the teacher wishes to conclude the topical sequence, a specific sequence must occur. Terminal or transitional sequence structures and sizes are related to the length of the sequence being terminated. Using the previously defined interactional sequence categories, it is possible to write rules for the basic classroom structures if the question of intent is defined. The individual has two choices: to persist or to desist. With these two alternatives in mind, it is possible to generate rules for successive interactive sequences.
Table 3

Rules for Successive Interaction Sequences

1) \( TI \rightarrow \{TI \} \)

2) \( TERM \rightarrow \) boundary marker + inform + (TI)

3) \( TE \rightarrow \{TE\} + \{RE-1 \} + \{RE-2 \} + \{List \} + \{Term \} \)

4) \( R-1 \rightarrow \{R-1 \} \)
   \( \{TE \} \)
   \( \{List \} \)
   \( \{Term \} \)

5) \( R-2 \rightarrow \{R-2 \} \)
   \( \{TE \} \)
   \( \{List \} \)
   \( \{Term \} \)

6) \( List \rightarrow \{List \} \)
   \( \{Term \} \)

7) \( Repeat \rightarrow \{Repeat \} \)
   \( \{TE \} \)
   \( \{Term \} \)

8) \( TD \rightarrow \{TD \} \)
   \( \{Term \} \)

9) \( PI \rightarrow Term \)

10) \( PE \rightarrow \{PE \} \)
    \( \{Term \} \)

Legend:

TI - Teacher inform
Term - Terminal Sequence
TE - Teacher elicit
R-1 - Re-initiation 1
R-2 - Re-initiation 2
PI - Pupil inform
PE - Pupil elicit

Appendix 1 contains a coded sample of classroom interaction. From that sample it as possible to extract the following interactional sequence patterns and specify their generation.
### Table 4

Interaction Sequence Patterns and Rule Application

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>TD Terminal</td>
<td>8</td>
</tr>
<tr>
<td>TE, R-1, R-1, TE, Terminal</td>
<td>3, 4, 4, 4, 3</td>
</tr>
<tr>
<td>TE, Repeat, TE, R-1, TE, R-1, Terminal</td>
<td>3, 7, 3, 4, 3, 4</td>
</tr>
<tr>
<td>TE, TE, TE, R-1, R-1, TE, TE, List, Terminal</td>
<td>3, 3, 3, 4, 4, 3, 3, 6</td>
</tr>
<tr>
<td>TE, TE, R-1, TE, R-2, Terminal</td>
<td>3, 3, 4, 3, 5</td>
</tr>
<tr>
<td>TI, TI</td>
<td>1</td>
</tr>
<tr>
<td>TE, R-1, R-1, List, Terminal</td>
<td>2, 4, 4, 6</td>
</tr>
<tr>
<td>TI</td>
<td>1</td>
</tr>
</tbody>
</table>

The elegance of the present scheme is that it can represent the phenomenon either as Mishler (1975a) or as Mehan (1978) describes. Admittedly, there is one weakness in the present system and that is its inability to deal with system failures, that is, those situations where the normal status relationships have been abrogated. At the moment it is questionable how much would be gained from a system modification that would include the ability to deal with system breakdown. One suspects that the necessary amendment would
have to look like the Sacks et al. (1974) minimal systematic for describing turn-taking.

Several comments need to be made to relate the use of discourse analysis to the Mishler-Mehan debate. First, the reliability of the Mishler stochastic model is highly dependent on the accuracy of the grouping of successive questions within an interactional sequence. While one could admit that there is probably a declining frequency of questioning within a topic, it may not be as regular as Mishler would argue for. A consideration of Table 4 suggests that the systematics are not that regular. Table 4 also suggests that Mehan's suggestion that classroom discourse is not under immediate stimulus control is not quite accurate either. This is the second comment we need to make. There are two forces at work within the structuring of an interactional sequence. There is a general teacher intent and an immediate student response which can and is effected by forces unbeknownst to the teacher. The frequent repetition of questions clearly shows the result of the tension of the two forces. What is required is a theory that will be flexible enough to deal with both situations. Mehan fails to capture this because he denies the immediacy of the phenomenon, but Mishler fails to describe it because he concentrates on a mindless progression. The application of the principle of the option of the teacher to persist or desist in
a line of questioning is crucial. The introduction of the principle into this system makes it sufficiently flexible to deal with the phenomenon. While it was not possible to account for those events where the system breaks down, it hardly seems necessary in light of what has been gained in economy and efficiency. Finally, it is possible to typify macro-structures using the system. Since the system uses three basic conditions and a boundary marker as categories, it is necessary only to extend these categories to longer structures to capture completely the longer sequences of classroom interaction.

Discourse analysis meets the original criteria for selection of a theoretical framework. It is clearly comprehensive because it deals with all the language within the classroom and does so from a universal point of view, that is, it considers the intent of the communication. It is also efficient as has been demonstrated. Using only a handful of constructs, it is capable of accounting for a range of behavior.
References


APPENDIX 1

Transcript for Teacher 1, Observation 1

T: Okay
I'd like to look at the story
so if you'd get your story out.
Okay.
Take a look at the story, ah
what are some of the terms we talked
about in short stories?
What would you identify as the basic
conflict of the story.
(pause)
Paul,
what would you identify as the basic
conflict?
S: Ah, the Indians and this white man.
T: Okay,
part of the conflict would be the
Indians against the white man
(pause)
specially what,
Can you elaborate on this?
S: Breaking treaties.
T: Okay
Whether or not to sign this treaty.
Ah, if we talk in terms
Remember I mentioned last week pro-
tagont and antagonist?
Who would be the protagonist in the
story?
S: inaudible phrase
T: The protagonist means what?
S: inaudible phrase
T: Basically the main character, often
associated with the good guy, but
more the main character of the story
Okay,
so the protagonist would be who?
Who would be the protagonist?
S: Custer (laughter)
S: Sitting Bull.
T: Sitting Bull. Sitting Bull would be
the protagonist.
The main character that's used as--
being talked about.
And the antagonist would be who?
Joe,
Who would the antagonist be?
S: The white man.

T: Okay, the white man.
They were opposing Sitting Bull.
Okay what about--
I think there's probably some other conflicts in the story other than just whites versus the Indians.
Does anybody else see other conflicts?
S: Between the Indians themselves.
T: Okay
Whether or not to sign the treaty, Specifically Sitting Bull versus who?
S: The tribe.
T: Okay, the tribe.
It's in sympathy with John Grass?
S: yeah.
T: Okay.
Why is Sitting Bull opposed to the treaty throughout?
Why is it he opposes the treaty? Seems to me there's several.
Does he have any good reasons for opposing it or does he--
S: They had changed the treaty.
T: Okay they changed it.
Changed what?
S: Well, they had the same . . .
T: Okay, They changed the treaty that they had before.
They made the boundaries less. The Indian tribes got less.
What else?
S: The guy that was the interpreter.
T: Okay
S: He the white . . .
T: Well,
I'm not sure about that.
Didn't they say . . . Didn't he say that he wanted to get an interpreter?
On page 16 it says the people asked for their own interpreter . . .
S: Yeah, but he didn't do too well.
T: Oh.
He messed up.
I don't remember that.
Where is it?
Anybody find where it is cuz
I must have missed it?
S: "do not sign."
Second paragraph.
T: Okay.
But isn't Sitting Bull who is talking?
It says the commissioner was pleased
now became furious and accused Sitting
Bull of intimidating the people, etc.
S: Yeah,
Sitting Bull was telling the
Indians not to sign.
T: Okay
but that's not the interpreter.
S: No,
But the interpreter, when they
talked about the interpreter,
that's Sitting Bull talking.
T: Yeah.
Talking.

See at the middle of 216 it says:
"The commissioners rose one after the
other and made talks and gave out many
copies of the treaty. Then the council
adjourned."
I thought that at that point all that
had happened was that they had handed out
treaties and everybody took them home and
everything seemed ok.
And then they got in this argument,
but you may have a point that . . .
that there was more that went on there.
It definitely happens later on.
Okay,
What are some more reasons why Sitting
Bull opposes this treaty?
That the boundaries have been made
smaller.
(pause)
What kind of land are they living on now?

S: Desert.

S: They were living on desert that wouldn't grow things.

T: Okay.

S: They needed all the land they could get to live on.

T: Okay.

The land they have and living on now isn't very good. And they're talking about making it smaller and even worse. Let's see.

There was a good quote in here where he said that but I can't find it offhand.