

STUDENT-TEACHER CLASSROOM INTERACTION:  
A CASE STUDY OF AN AMERICAN AND A FOREIGN TA

by

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Abstract - FTA Plan B

Videotapes of two math TAs--one American and one foreign--were analyzed and compared in terms of student-initiated student-teacher interaction (questions directed to the TA). In addition, the TAs and students who asked questions were interviewed & the resulting 'interpretive analysis' was also used as a basis for comparison and as a way of getting at speakers' 'intended meanings'. The analyses showed that the FTA had more difficulty, compared with the American TA, in terms of handling student-initiated interaction. In particular, the FTA experienced more difficulty in: 1) fielding questions related to classroom bureaucracy than to course content and 2) handling restatements of original questions that deviated considerably from the original. Suggestions for improving the interactive component of TA training courses including the provision of videotaped genuine TA classes and recommendations for further research are included.

## ABSTRACT - Materials Plan B

This paper presents a set of materials to be used as part of a course on aspects of contemporary American culture, primarily designed to meet the needs of a group of advanced ESL students (i.e., section 'D' of the Summer Intensive English Language & Orientation Program at the University of Minnesota). The basic 'content' of the unit derives from a consideration of the so-called "Squeal Rule" (the mandatory requirement for government-supported birth control clinics to inform parents whose children receive birth control). However, the aim of the materials is not to teach this 'content' specifically, but to demonstrate how a topic such as the "Squeal Rule" and the controversies surrounding it can be used as a representative sample of a contemporary American issue for discussion and debate. Through the use of this material, it is intended that students will develop academic skills like taking part in discussions (e.g., expressing agreement or disagreement, following an argument and responding) as well as develop a sensitivity for those American cultural values and assumptions which are crucial to an understanding of what speakers mean by what they say. Extensive notes to the teacher plus a 5-day and a 10-day lesson plan for using the materials are included.

## INTRODUCTION

In the spring of 1984 a research project was undertaken at the University of Minnesota in which two Teaching Assistants (TAs) teaching the same course--one American and one foreign--were videotaped and compared in terms of student-teacher interaction (questions to the TA). Since the foreign TA had taken two quarters of the 'Communication Skills for TAs' course, the study can best be characterized as a follow-up case study. The study was designed with three purposes in mind:

- 1) to document any difficulty the foreign TA was having in handling student-initiated questions (using the American as the 'norm');
- 2) and if so, to more accurately assess the interactive needs of foreign TAs in order to improve the interactive component of the Communication Skills course at the University of Minnesota and as a model for other Communication Skills courses;
- 3) to have access to a record of 'real' language use as a basis for authentic materials to be used in the Fielding Questions unit of future Communication Skills courses.

The following paper will attempt to describe the project in greater detail.

## I. BACKGROUND INFORMATION

### A. Reasons for Foreign TAs Teaching in American Universities

Due to the fact that many graduating American college seniors are leaving college rather than going on to pursue graduate degrees and because foreign graduate students are being recruited to fill that gap, increasing numbers of those foreign graduate students are being employed as university TAs (teaching assistants). In addition, along with the increase in the number of foreign TAs has come an increase in complaints about the effectiveness of their teaching and especially about their lack of intelligibility due to 'foreign accent.' (See pages 4-5.) It appears that foreign TAs are here to stay, however, since many departments don't have enough American TAs to fill teaching positions, and also because many foreign graduate students require financial support to continue their studies and a teaching assistantship is one of the major sources for that support. The problem is not only economic, however, but involves a variety of causes. Robert B. Kaplan, in the foreward to a book about the 'foreign TA problem' entitled Foreign TAs in U.S. Universities (Bailey:1984) states:

In the recent past, the number of non-native English speakers in the population of graduate students has increased--a phenomenon attributable to a variety of causes, both foreign and domestic, demographic and economic.

### B. Size of the Problem

To get a better idea of the size of the problem one must look at the available statistics. According to an article by Barnes & Finger (1981:1):

The problem is most acute at science and technology institutions, where graduate enrollment is in many cases approaching 50% foreign, and the number of foreign TAs increased accordingly.

On a more local level, the number of foreign TAs in certain departments here at the University of Minnesota reflects those percentages. For example, according to Robert Hardt (Wilkowske:1984), associate head of the math department, "42 out of 88 TAs (in the math department)...speak English as a second language." However, the number of foreign TAs is not as large as one would expect from the number of complaints heard--complaints which led to several recent actions by the Minnesota Legislature.

C. Historical Development of the TA Course at Minnesota

An ESL course for foreign TAs did not exist at the University of Minnesota until the winter of 1978 when a 'Communication Skills for Foreign TAs' course was first offered. At that time, the course was offered on a strictly voluntary basis to teaching assistants realizing the need for such a course or to departments that recommended students for the course, but there was no University-wide standard for language proficiency among TAs at the time. Over 100 foreign TAs participated in the voluntary courses which were offered between 1978 and 1984 (Wallace:1983).

In May 1983, however, after two members of the Minnesota Legislature, Connie Levi (IR-Dellwood) and James Swanson (DFL-Richfield), were made aware of the 'foreign TA problem' as a result of complaints by their children (who had foreign TAs at the University) as well as by some constituents, the Legislature required the University to develop a policy to upgrade foreign TAs' English proficiency. Since then TAs have been required to take a test to assess their oral/aural English skills and then required to participate in the 'Communication

Skills for TAs' course if their results on the test fall below a certain level. Just recently (May 1984), the Legislature changed the policy to include foreign professors as well as foreign TAs.

D. The 'Perceived Problem'--'Foreign Accent'

As I mentioned previously, there has been a general tendency to blame the 'problem' on more salient features of discourse like pronunciation, especially among non-ESL trained people. Complaints about TAs are usually stated in terms of 'foreign accent.' For example, one article entitled "TAs' Foreign Accents are Issue at 'U'" (Oberdorfer:1983) states,

Kendra Benham...couldn't understand one of her teachers.... By the second day of the math class...she realized the TA's foreign accent was too thick for her....Rob Walsh struggled for two quarters to master the accents of two teaching assistants....

The same article adds,

For years, some students at the university--especially those in math, economics, chemistry and engineering--have complained about their teaching assistants' foreign accents.

However, there is some disagreement as to whether or not pronunciation is the 'only' or even the 'principal' problem.

Jan Smith, an ESL instructor at the University of Minnesota, feels differently. She states (Larson:1984),

Some foreign professors have a thick accent and have good teaching skills, and the students have no problem understanding them. Others speak English well, have bad teaching skills and students say they can't understand them because of their accent.

She adds that the problem could be due to "lack of contact with non-native English speakers" or "a narrow view of what they can or cannot understand." This is corroborated by a statement from the same article given by Willard Miller, head of the math department:



We had one professor who's lived in the Twin Cities 25 years and four or five students a year complain about his accent...he's from Kentucky.

Another view of the severity of the problem (and possible reason for it) comes from the group of people the foreign TAs are responsible for teaching and with whom they come into direct contact--undergraduate students. One student who was interviewed for the present study made the following comments:

I've only had one TA that's been any good and that's this (American) TA....I've had 6 TAs--it's not even any use going to the TA's class....Most of them are at this university.... I've got one TA in American history from Italy. The thing is it's not so much she can't speak it; she can't understand it.... She'll ask you a question. Someone will answer. She'll say "No." and then answer the same as he said.

This last comment also supports the claim that pronunciation is not necessarily the only--or even the worst--problem that TAs have (at least in their students' eyes).

Obviously, there are lots of diverse opinions on the subject. The problem, however, is that these opinions are mainly based on unsubstantiated, 'gut-level' type observations without any hard evidence to support them. What's needed is research into the 'problem' as a means of trying to discover what's really going on.

E. The Current 'Solution': Communication Skills for Foreign TAs Courses

As a result of the current situation and in an attempt to 'solve' the 'problem', Communication Skills for TAs courses have only recently sprung up around the country. One survey, which was conducted in the fall of 1982, found that out of a total of more than 40 universities surveyed,

15 universities...now have, or have had, programs designed to

upgrade the language, cultural sophistication, and teaching skills of foreign TAs. (Bailey 1984:43)

All of the training programs are relatively new. The oldest is that at the University of California at Berkely (since discontinued), established in 1976, while the newest among the responding schools are those at Stanford U and Northeastern U, both established in 1982. (Bailey 1984:44)

In addition to the University of Minnesota, some of the major institutions which have courses for TAs are: Ohio University, Stanford, Michigan, Penn State, Harvard, Cornell and four campuses of the University of California (Davis, Irvine, USC, UCLA). 'Communication Skills' courses or 'TA courses'--as they're more commonly referred to--vary from university to university, but they generally follow a similar format:

TAs from non-English speaking countries, which include such places as India and Pakistan, are given some kind of proficiency test or oral interview to determine whether or not they will be required to take a 'Communication Skills' course. Stanford, for example, administers a questionnaire (written), oral interview and requires the student to read, explain, and answer questions on a passage from his/her field. Drexel University administers the Ilyan Oral Interview and also gives students the listening comprehension and grammar sections of the CELT test. Programs are generally one semester or one quarter long and consist of group work in which TAs give videotaped oral presentations to their peers. In addition, most universities also require students to attend weekly tutorial sessions with the instructor in which they view their videotaped or audiotaped presentations for feedback on the areas of teaching, culture and English language skills and in which they work on individual language problems with the instructor. Again the situation varies, but generally there is some kind of post-

test and/or final presentation in which the TA is judged on his/her 'readiness' for classroom teaching. Sometimes TA supervisors are asked to attend these presentations to help give feedback and/or to make decisions about students' preparation for teaching. In addition to the seminar-type of program, there is also "the orientation-type, which meets for a short period of time prior to the beginning of the foreign TA's first term" (Bailey:1984) and which covers more or less the same material as the seminar-type does in a reduced period of time.

To get a better idea of what each course includes and specifically to focus on how much time is devoted to interactive skills, I've included syllabi or course descriptions from six universities which offer 'TA courses.' They are: Penn State (Appendix A), Michigan (B), Stanford (C), Ohio University/Drexel University (D), and Minnesota (E). Student-teacher interaction falls under various cover terms (paraphrasing and answering questions, classroom dynamics, etc.) and is usually 'covered' in the sense that programs have students give presentations and answer questions on those presentations. In addition, almost all programs devote additional time to giving students strategies, techniques and practice paraphrasing and answering individual questions (See individual syllabi.). However, the way student-teacher interaction is handled may have serious drawbacks for TAs, which I'll describe in the next paragraph. Since I'm not familiar with the way fielding questions (student-teacher interaction) is handled at other universities I can't vouch for what happens there; nevertheless, as a 'TA course' instructor at the University of Minnesota, I am familiar with what happens here. Let me briefly explain how the fielding questions component is currently handled in our course.

Preparation varies somewhat according to the instructor, but for the most part students prepare by discussing reasons and strategies for paraphrasing and restating questions and then practice using questions supplied by the instructor. For their actual presentation, students are videotaped restating and answering questions (out of context) about their field and/or how they would deal with a particular classroom situation. As previously mentioned, students also give regular presentations after which their peers or the instructor\* may ask questions pertaining to the presentation, but the number and types of questions are often erratic, depending on audience interest, background, etc. For example, a TA who gives a particularly easy-to-follow and interesting presentation may get several questions, whereas a boring or incomprehensible TA may receive no questions at all.

Finally, let me say a few words about the materials used in the courses. From the chart included below (Figure 1), it's hard to tell exactly what materials are used, but it appears that most programs rely heavily on videotapes of student presentations. The same survey (Bailey:1984) found:

...About  $\frac{1}{2}$  of the programs use a text or manual. The others either use teacher-made materials or did not specify in the survey what materials were used.

The materials listed on the chart are oriented more towards the productive side of language use. There are very few that are designed to help students cope with the interactive aspects (give and take) of being a TA.

\* Sometimes native speakers are invited to attend lectures, but this is rarely the case.

Figure 1 (Bailey:1984)

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Table 7. *Materials and activities used in TA training programs*

Program	Materials and activities
Arizona State	Levine and Adelman, <i>Beyond Language</i> ; teacher-made materials
UC Berkeley	No materials specified
UC Davis	Parts of various texts on public speaking
UC Los Angeles	Videotaping; role plays; Rodman, <i>Public Speaking</i>
Houston	Videotaping; role plays; essays; discussions
Illinois at Champaign/Urbana	Videotaping; discussions; role plays; Rodman, <i>Public Speaking</i>
Indiana	No materials specified
Minnesota	Videotaping; various ESL materials in individual tutorials
Ohio	Videotaping; Morley, <i>Improving Spoken English</i> , Vol. 1; TAs' class texts
Oregon State	Microteaching, cognitive maps, feedback, lectures
Pennsylvania State	Videotaping
Stanford	Videotaping; Keller and Warner, <i>Gambits 2:Links</i> ; Fisher, <i>Teaching at Stanford</i>
Cornell*	Videotaping
Northeastern*	Videotaping; Althen, <i>Manual for Foreign TAs</i> ; Keller and Warner, <i>Gambits</i>
Texas Tech*	Materials vary

\*Orientation-type programs

II. RATIONALE (Why is research into the interactive needs of foreign TAs necessary?)

There are three main reasons why research into this area is needed.

They are:

- 1) We need to get a better grasp of what the 'foreign TA problem' really is. The 'problem' has generally been viewed in terms of 'foreign accent' as opposed to other areas of English language use, teaching skills, culture, etc.
- 2) Due to the importance of student-teacher classroom interaction and relative difficulty for TAs, we need to evaluate how well our TA courses are meeting TAs' interactive needs. The results should be used to modify course syllabi and to determine how well program funds are being spent.
- 3) There's a paucity of authentic materials for the interactive component of TA courses. Classroom research would provide 'real' examples of student-teacher classroom interaction for TAs to use in TA courses.

A. Initial Observations: Difficulty of Student-Teacher Interaction for Foreign TAs

This study stems from two major observations I made as a TA course instructor. As instructors we often observe those TAs who are teaching the same quarter they're enrolled in the TA course. One TA I observed (over halfway through the course) did very well when he was in control of the class. As a matter of fact, his pronunciation and other productive language skills were quite good and his presentation skills were above average too. However, whenever students asked him a question his performance deteriorated rapidly. He had difficulty understanding questions and once he finally seemed to grasp the question, his answers seemed totally unrelated to the question. The questions were not that long or complex; some were quite short and merely involved the mechanics of the class.

The second observation that forced me to re-evaluate the difficulties TAs have with student-teacher interaction and which made me

question the effectiveness of that component of the TA course revealed much more severe problems. I observed a TA who had completed the course and whose English was passable but who taught as if there were a wall between him and the students. He discouraged student-teacher interaction by 'hugging' the blackboard, talking in a low voice to himself and acting oblivious to the rude comments and actions the students displayed toward him, e.g., listening to Walkman radios, staring out the window, getting up and leaving while he was still lecturing, etc. Later he confided that he wished he could say things at the beginning of class to "put the students at ease like his professors did." In addition, he said he didn't encourage questions and students didn't ask many because of what had happened during a traumatic first week of class. Because students had attempted to ask questions at that time but saw the TA couldn't understand and/or answer their questions, they decided to give up. The TA had actually been relieved in some ways because it took a lot of pressure off. It was obvious from the students' behavior, however, that they didn't feel they were benefiting from his class.

It's important to look at student-initiated interaction because of the frequency with which questions arise in TA taught courses. Some recitations, for example, are almost entirely question and answer sessions. Because some professors expect the majority--if not all--questions to be handled in the lab/recitation, the TA is the major, or sometimes the only, source of information/clarification for the students. For instance, one interviewee told of going to his professor with a question and of being told that it was not the professor's job but the TA's responsibility to answer any and all course-related questions. In addition to handling questions based directly on the lecture, if the

TA tries to clarify a point made by the instructor or to amplify a concept, students must be able to ask questions if the TA's explanations are not comprehensible (for whatever reason).

For the TA, fielding questions is not only one of the most frequent and important tasks s/he faces, but it's also one of the most difficult because of psychological stress resulting from loss of control and fear of the unexpected. When lecturing (describing, explaining, etc.), the TA is in full control and therefore can prepare as much as s/he feels is necessary--right down to reading or even memorizing the presentation word for word. However, as soon as a student asks a question, full control is no longer commanded solely by the TA and therefore s/he is no longer sure of exactly what to expect. Even as native speakers, we know how difficult it is to 'think on our feet' and to talk extemporaneously. Often we grope for words, stutter or stammer and--if we haven't organized our answer or thought it through beforehand--we end up sounding incoherent or even unintelligible. If we're nervous we may misunderstand or misinterpret a question and thus give an inappropriate answer. This loss of linguistic control is compounded for the non-native speaker who has a language 'handicap' to begin with.

It's not surprising that TAs (being well aware of the previously stated problems associated with opening up the class for questions) have developed avoidance strategies to deal with those difficulties. In addition to the TAs previously described, I interviewed yet another TA (who was reticent about being taped) who commented that there was either zero or very little student-teacher interaction in his class. He stated that there had been questions at the beginning of the quarter (like the other TA I had observed), but that once students realized



the TA didn't understand (or couldn't answer) their questions, the students gave up. A 'closed class' (in the interactive sense) resulted. The TA then said he developed a strategy to avoid having to deal with questions in class. He said he follows a very simple format each day, never deviates, writes everything on the board, doesn't elicit questions in class but attempts to answer them afterwards, etc. This is commendable in the sense that the TA is 'coping,' but it leaves one wondering how the students feel if they still can't follow everything he does or if they have a question that can't wait until after the class. Furthermore, the two TAs are in math--a subject in which it's much easier to successfully employ those types of strategies as opposed to a subject like economics, for example, where more discussion is necessary, i.e., the TA can't merely write the steps for solving a problem on the board.

The present study, then, is an attempt to look at the 'foreign TA problem' in broader terms to determine whether or not anything else besides 'foreign accent' could be responsible for difficulties. I decided that since the observed TAs' productive skills were passable but because they were having problems dealing with the interactive aspects of teaching, it was worth looking at the interactive component for greater insight into the 'problem.' As previously mentioned, many people think 'the problem' is 'foreign accent,' but nobody really knows for sure. From the little research that's been done in this area, we know very little about what problems foreign TAs really face in the classroom.

#### B. Post Course Needs Assessment

The second major reason for doing this study is closely related

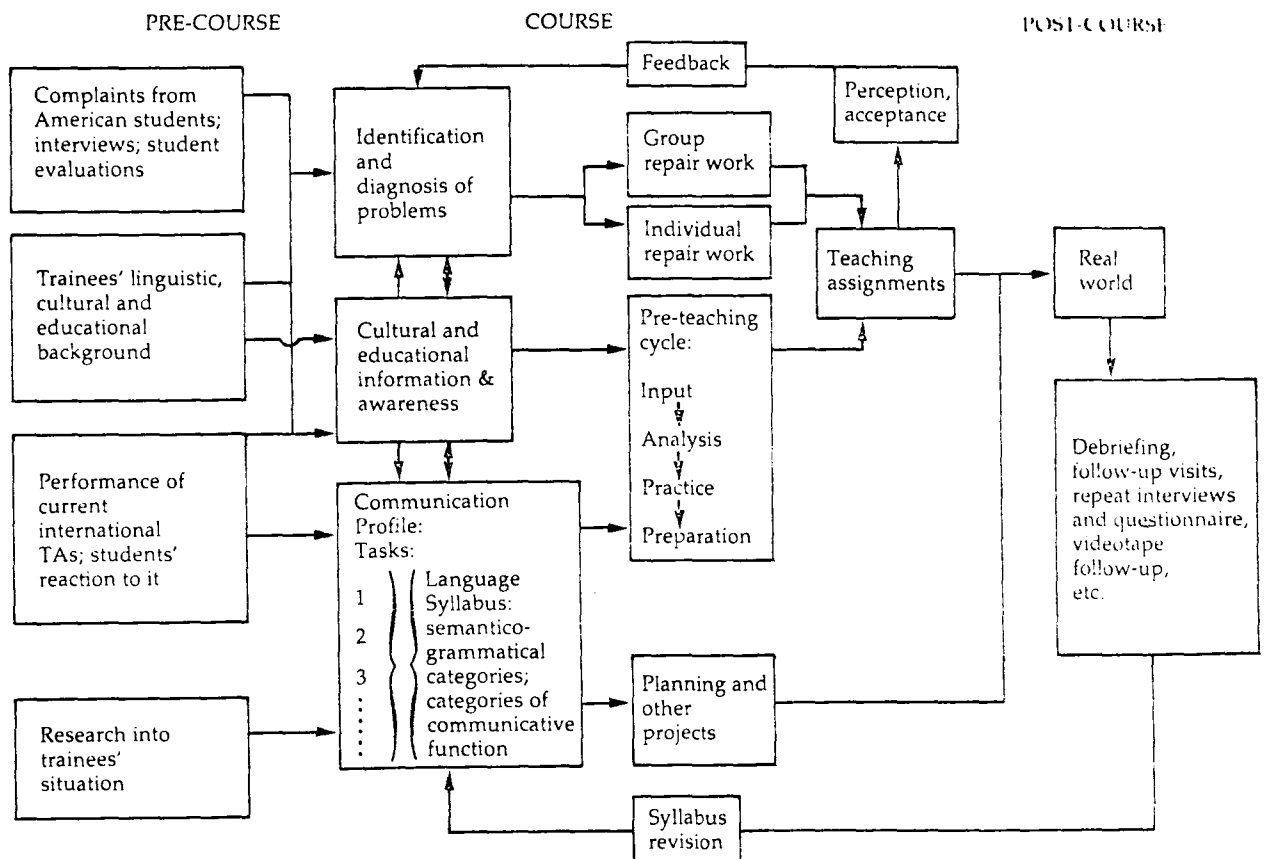
to the first. If the two TAs I observed were having problems with classroom interaction--not pronunciation--then I began to question whether or not we were meeting our students' needs in the TA course. In fact, other TA course instructors have brought up this point too. Donna Steed Rice (Bailey:1984), in describing the oral/aural component of a one-semester program for new foreign TAs says:

As the project developed, it became increasingly apparent that many of the foreign TAs' problems in the classroom were not directly language related. Problems such as maintaining classroom discipline and not being able to respond 'on the spot' to both legitimate questions and to those questions that were not entirely academic in scope were high on the priority list for class discussion. (Bailey 1984:71)

If we look at Shaw & Garate's (Bailey:1984) model for a training course for international teaching assistants (Figure 2), we see that a post-course needs assessment is an integral part of syllabus design.

Figure 2

A model for a training course for international teaching assistants



Shaw and Garate state:

...the model calls for the trainees to be followed into the real world of university teaching....Observations of trainees in action is useful, not only for the trainees, who are given further support & help in their teaching, but also for the trainer, who is constantly reevaluating and redesigning the course....In the long run, one of the most useful features is the capacity to incorporate change both during the course and between one course and the next, as our knowledge of the nature of the problem and of possible solutions increases. (Bailey 1984:39-40)

For the reasons stated above, it was decided that a follow-up case study might prove more fruitful in terms of modifying the course rather than doing a case study of a TA who had not taken the TA course.

A post-course needs assessment would also helpfully aid us in deciding how to spend the money allocated for TA programs more wisely. There are several major areas in which the money could be spent, e.g., materials, instructors, testing, research, etc. The more information we have about TA needs and TA course effectiveness, the better able we'll be to decide how our funds should be spent. In addition, because the money is allocated by the state legislature, administrators are held accountable for ensuring that the money be wisely spent.

#### C. Authentic Materials for the Interactive Component of TA Courses

The last reason for undertaking the project was to obtain examples of 'real' language use as a basis for authentic classroom materials. If one analyzes the ways in which interactive skills are dealt with in the TA course as presently taught, and if one evaluates the materials used (See Section I, pages 8-9.), it becomes apparent that there are several problems/shortcomings:

- 1) In the fielding questions unit, questions are asked out of context by the teacher. In real life, questions are rarely asked out of context. Also, ESL teachers are known to speak some form of "classroom English," which is unlikely to be used by the TA's American students.

- 2) Questions related to presentations generally come from other TAs, who speak an IL which the speaker and questioner may or may not share. If ILs are shared, communication could be facilitated; if not, it could be hampered. Questions rarely come from native speakers, whereas in the actual classroom situation, the majority of questions will come from native speakers.
- 3) TAs rarely have to answer questions related to bureaucracy (classroom management, mechanics, etc.) in TA courses. In actual classroom situations, this type of question arises quite often.
- 4) TAs have no examples of 'real' student-teacher interaction of either foreign or American TAs to look at as a basis for discussion of strategies and techniques to deal with potential problems, as material for practice in listening comprehension, or as examples of 'good, bad or normal' interaction.

It was decided then that real life examples of student-teacher initiated classroom interaction were needed as a basis for the fielding questions unit of the TA course to determine what 'really goes on' and that the resulting videotapes of both an American and a foreign TA could be used as materials for the unit.

### III. PREVIOUS RESEARCH

The present study can best be characterized by using the following three terms:

- 1) 'case study'                      The study looked at only one instance of student-teacher interaction of a foreign TA and compared it to only one instance of student-teacher interaction of an American TA teaching the same course.
- 2) 'follow-up study'                The study attempted to look at the interactive needs of a foreign TA who had taken two quarters of the Communication Skills for TAs course at the University of Minnesota.
- 3) 'interpretive study'             The study attempted to get at underlying interpretations of what speakers 'intended' by what they said and at how hearers 'interpreted' what they heard through a process of triangulation (TA/student/observer).

Because of the newness of the 'foreign TA problem' and therefore lack of research into this area, the relevant literature is very scant. Nevertheless, some studies do exist.

#### A. Case Studies

Some case studies of foreign TAs have been done recently, but none have specifically dealt with the interactive needs of foreign TAs. Gillette (1982), Tu (1983), and Bailey (1982a) were all comparison studies of foreign and American TAs; however, none looked at student-teacher interactive discourse using student-initiated questions to the TA as the data to be analyzed. Gillette did analyze lecture discourse as a type of interaction between the lecturer and the audience, but she focused on teacher-initiated discourse (lecturing) rather than on student-initiated discourse (questioning). Tu's study also concentrated on TAs' spoken production--not on student-

teacher interaction. While Bailey did look at evidence of TAs' relationships to their students, her purpose was to classify the TAs according to common characteristics (typologies).

#### B. Follow-up Studies

Landa & Perry (1980) did a combination follow-up/case study of several foreign TAs who had been through the Communication Skills course here at Minnesota. The study looked at TAs who completed the TA course, what happened to them in terms of subsequent employment as TAs, and how these factors correlated with self-assessment and external assessment. Although Landa and Perry did ask TAs for feedback on what they felt their needs were after completing the course, the researchers did not attempt to assess the TAs' needs based on actual classroom performance.

#### C. Interpretive Studies

Although the process of triangulation has been used before in SLA research and specifically in describing student-teacher interaction (Long:1980), there is nothing in the literature about any interpretive studies of American student-foreign TA interaction being done. Straight listening-speaking interpretive studies are irrelevant, since as Parson & Szelagowski (1983:114) state,

Since speaking/listening focuses on general communication skills, it does not necessarily address...those patterns of interaction which occur between the teacher and the student.

It appears that nothing exactly like this project has been undertaken previously. However, for an exhaustive list of references that includes research into this area of a more general nature, see Bailey (1984).

#### IV. DESCRIPTION OF THE STUDY

##### A. Procedure

The study consisted of five steps:

- 1) locating two TAs--one American and one foreign--who were fulfilling comparable roles within the University's teaching structure
- 2) informing the students about the project
- 3) videotaping the TAs' classes on the same day
- 4) interviewing the TAs for their interpretation of what went on at selected interactive points (student-initiated questions to the TA) in the class
- 5) interviewing some of the students who had asked questions in order to compare their interpretation of what happened with their TA's and the observer's

##### 1. Selection of TAs

An attempt was made to find two TAs--one American and one foreign--who were fulfilling comparable roles (in terms of course taught, level of students, previous teaching experience, etc.).

The American TA was used as an experimental 'control,' i.e., to determine some type of 'norm.'

A Korean woman (Keumog) who had taken the Communication Skills course the previous two quarters volunteered for the study. Since she had been my student fall quarter, she knew me and was therefore willing to participate in the project.

An American 'counterpart' (someone teaching a different section of the same recitation with similar background experience) was located. As it turned out, 'Jim' was quite evenly matched to Keumog. For example, they both taught the same course the previous quarter, and both had experience teaching math previous to that (although Keumog's experience was tutoring while Jim's was being a TA for a different course).

## 2. Informing the Students

The two classes were informed that they would be videotaped as part of a research project for an MA in ESL. They were also told that the taping was in no way a 'punitive' measure nor would it be used for hiring purposes. Both groups were given the same information and an attempt was made to ensure that conditions for both groups were the same as well.

## 3. Videotaping the Classes

The TAs' classes (Calculus 1211 recitations) were both videotaped on the same day. Both classes consisted of going over a quiz the students had taken the previous Thursday and doing questions from Units 6 and 7 in the text. However, the content did vary due to the fact that:

- 1) Each TA gave his/her own quiz and
- 2) students chose which problems to cover, so different problems from the units were covered in the two classes. (The only problem which turned up in both classes was number 20.)

## 4. Interviewing the TAs

An attempt was made to interview both TAs and students as soon as possible after videotaping to ensure more accurate interpretations of interaction (because of a shorter time lapse between the taping and the interviews); however, due to scheduling problems and technical difficulties, most of the interviews took place several days later.

The following chart summarizes the time lapse:

<u>Keumog (foreign TA)</u>	<u>Material covered in Interview</u>
videotaping May 8 morn.	none
May 8 aft.	first half of class
May 9 morn.	second half of class (last question & general interview not taped)
May 24 aft.	last question and general interview



<u>Jim (American TA)</u>	<u>Material covered in Interview</u>
videotaping May 8 aft.	none
May 10 morn.	whole class and interview (bad tape)
May 17 morn.	first half of tape & general inter- view
May 18 morn.	second half of tape

The following format was followed during the interviews with both TAs: TAs were asked general questions about interaction in their classes in the general interview (Appendix F), including whether or not the videotaped class was 'typical,' what kind of rapport the TAs felt they had with their students, etc. Then the tape was played through from beginning to end. Each time a student asked a question, the tape was stopped and the TA was asked to paraphrase the question. (Everything that was said in the interviews was recorded.) As each TA answered a question, s/he was asked:

- 1) whether or not s/he felt they had answered the question to the student's satisfaction and
- 2) how s/he knew the student was/wasn't satisfied with the answer.

There were some minor additions in the way the foreign TA was interviewed which should be noted. First, the foreign TA was asked to paraphrase the question (or a manageable chunk of it). Then, she was asked to try to write down word for word the question as the researcher played parts of it slowly and repeated it several times.

When the foreign TA was unable to understand what was asked, she was asked to offer any insights she could into the difficulties she was having. (See the interpretive analysis --Section V, pages 44-48.)

## 5. Interviewing the Students

The students were interviewed in much the same way as the TAs (with minor differences). They were shown whichever problem was relevant to their question, asked to restate their question after they heard it (for transcript purposes), and to interpret, if necessary, exactly what they meant by their question. Then, the TA's answer was played and the students were asked:

- 1) whether or not they had been satisfied with the answer
- 2) why or why not
- 3) how they indicated their satisfaction (verbally and/or non-verbally).

Finally, they were asked general questions about the class and about the 'foreign TA problem' in general. (See Appendix G.)

## B. Limitations

### 1. Case Study/Follow-up Study

As with any case study, there are certain limitations which must be taken into account when analyzing the data. First of all, we're looking at two individuals who may or may not be representative of foreign TAs and of American TAs in general. We can not assume that any behavior which they do or do not exhibit can be generalized to a whole group.

The second major limitation, which is related to the first, is that we're looking at only one sample of classroom behavior of these two individuals. Once again, depending on numerous factors (emotional state, health, influence of the camera, etc.) our videotaped data may or may not be representative of what that particular individual does in the classroom on any one day. Moreover, because of the presence of

the camera and awareness that the class is being videotaped for research purposes, the class probably ends up being less 'typical' than it would be otherwise.

## 2. Interpretive Study

Due to the fact that this is also an interpretive study, there are also several limitations related to the subjectivity of the study. One problem is that of time lapse. Even interviewing subjects the same afternoon (as I did with Keumog) and showing them the interactive portion of the tape immediately beforehand still does not ensure their interpretation will be the same as it would have been had they interpreted the interaction immediately after the interchange. In addition, interpretation of any kind is always clouded by both the interviewer and the interviewee's subjectivity and it's compounded by the interviewee's desire to 'save face' (if the interaction involves an embarrassment like being unable to understand a question, for example).

From the observer's side, there are also limitations which stem from the subjectivity of the research methodology. Again, there are the same problems of time lapse and subjectivity on the part of the interviewer, and if the interviewer is also the researcher, there may be problems with phrasing, non-verbal communication and other ways in which the researcher 'communicates' (unintentionally, of course) his/her positive or negative reactions to the questions based on what s/he hopes or expects to find.

If the question is poorly stated, or if it's unclear to the subject, s/he may require restatement or paraphrase from the interviewer.

As the interviewer accomodates and/or as s/he 'probes' for additional information, s/he may unwittingly ask 'leading questions,' which essentially 'put words into the subject's mouth' or encourage/discourage certain information.

Finally, there's a problem with the subjects knowing anything about the nature of the project, Even if they're only aware of the bare minimum of what the project is looking at, they may answer according to what they think the interviewer is after. Finally, this problem is compounded by the fact that if they try to 'second guess' what they think the interviewer is looking for, or if they are 'led' by the interviewer in a certain direction, the interpretation may be biased.

Of course one way of avoiding many of these limitations is to get someone else to do the interviewing. However, one does not always have the luxury of having access to research help. Also, there is an advantage to doing the interviewing oneself and thus of being able to probe when it seems that securing certain information may shed light on a hypothesis. So, despite the recognized limitations of this 'interpretive' approach, the possibility of gaining some insight into the participants' views of the interaction was considered to be beneficial.

## V. ANALYSIS OF DATA

### A. General Overview

The fact that the purpose of the study was to do a post-course assessment of the interactive needs of a foreign TA limits the task considerably. After viewing both tapes several times, it was decided that just focusing on student-initiated student-teacher interaction alone (student questions to the TA) would yield a wealth of data in and of itself.

As mentioned previously, the American TA was used as a 'control' in the study, i.e., a more objective way of measuring the 'norm' because presumably student expectations are based on what normally happens in a class taught by an American TA. We have to have some kind of 'standard' or 'goal' for our foreign TAs; this standard should not be higher than what we expect from our American TAs. Another reason for this control, of course, is to have a more empirical--rather than anecdotal or intuitive--way of measuring our TAs' performance in meeting interactive requirements in the classroom.

The result of this limited focus is that most of the 45-minute class periods was excluded from the data. The only portions that were transcribed and analyzed are those sections where a student asked the TA a substantive question. By restricting my investigation to 'substantive' questions I am excluding the type of question often asked in a math class where the students request a problem be worked out by shouting out the number to the TA.

A complete transcript of the question sets (A question set is the total discourse involving: 1) a question or questions to the TA about a particular problem and 2) the TA's responses to those questions--both verbal and non-verbal.) is included as Appendix H. However, to

give the reader an overview of what was compared and to get an idea of how the classes appear to the casual observer, I'll briefly summarize student-teacher interaction in both.

In the foreign TA's class there are two sets of questions initiated by students. The first set (question set 1) involves the same student (S1) asking a series of two questions pertaining to a problem previously worked by the TA. Later, at the end of class, another student (S2) asks a series of three related questions about classroom mechanics (question set 2).

To the casual observer, it appears that the foreign TA misunderstands the first question of the first set and the first two of the second set and that the students therefore have to restate or paraphrase their original questions. (See pages 35-36, 44-48 for further discussion.)

In the American TA's class, there are three sets of student-initiated questions in which all three sets relate to problems previously worked by the TA. The first set (question set 3) consists of a series of three questions by the same student (S3). The second set (question set 4) consists of a series of two questions by one student (S4). The final set (question set 5) consists of a series of three questions pertaining to the same problem--two asked by one student (S5) and one asked by another student (S6).

In the American TA's class, it appears to the casual observer that the TA understands the questions and immediately proceeds to answer them. It also appears that even though student questions are related to one another, they are not restatements or paraphrases

of the same question due to perceived lack of understanding by the TA, but rather they serve other functions such as requests for clarification or additional information based on what the TA says in the interim. (See pages 36-38,49.) Upon careful analysis and after extensive interviewing for the students' and TAs' interpretations of what they perceived to be happening, this generally was the case.

Due to the non-controlled nature of the study, the data does not lend itself to a strict quantitative analysis. However, we can attempt to investigate the interaction at the linguistic level, in an exploratory manner. There are a number of different ways of looking at the language produced in the videotaped interactions and I will consider three ways of doing so. The problem with the data under investigation is that it is of the type which is normally excluded from formal linguistic analysis due to the fact that linguistic behavior and not only language per se is being analyzed. Consequently, I will try to explore various ways of analyzing the possible components of the linguistic interaction in my data.

First, I will consider the usefulness and applicability of a formal/functional analysis using formally-defined components such as 'interrogative,' 'declarative' and 'imperative' along with functional categories like 'request,' 'giving information,' etc. Second, I will investigate the applicability of a particular type of discourse analysis (developed for the study of classroom interaction) employing interactively-defined categories such as 'elicit,' 're-elicit,' etc. Finally, I will analyze the data using an interpretive analysis based on the TA and undergraduate interviews conducted after the videotaping (described in Section IV., pages 19-21).

The discourse analysis will be used as a starting point for interpreting the interaction in a 'quantitative' manner; however, it should be kept in mind that the resulting figures are merely rough approximations. The interpretive analysis, on the other hand, will serve to look at the data more qualitatively, and despite the subjectivity inherent in an analysis of that type (See Section IV. pages 22-23.), it may be a much more accurate interpretation of the data. Let me emphasize that these interpretations are merely first attempts at discovering some kind of systematic way of looking at student-teacher classroom interaction as a basis for describing what really goes on. Hopefully a more valid and reliable system for analyzing interactive data will be developed in the near future.

#### B. Formal/Functional Analysis

In order to compare student-teacher interaction in the two classes, student questions (out of context) are analyzed in terms of form and function. (See pages 29-30.) In terms of form, the questions are categorized according to:

- 1) grammatical category
  - interrogative - WH, yes/no, tag, choice, or embedded questions
  - declarative - subject verb word order
  - imperative - (There are no examples in the data.)
- 2) polarity (negative/positive)
- 3) where appropriate, intonation (e.g., rising vs. falling tag questions)

A simple description of form would not allow us to say anything about communicative function simply because in English there is no strict form-function relationship. For that reason, a functional analysis was included.



The major functional category appropriate to the student-initiated questions is 'request', due to the fact that only student-initiated questions are being analyzed. However, those requests appear to fall into three sub-categories:

- for explanation - student wants TA to explain a step, for example; best characterized here by open-ended (WH) questions
- for confirmation - student gives TA his/her interpretation of what went on and requests that TA confirm or deny the statement; best characterized here by yes/no and tag questions with +/- polarity
- for permission - student wants TA to allow him/her to do something; implicit is TA's permission or refusal for the request; best characterized here by either open or closed questions unrelated to class content, i.e., pertaining to classroom mechanics

In addition, there are some cases in which it appears the student is communicating information to the teacher. These instances have been coded as:

- giving information - student communicates information to TA; best characterized here by statements, often involving a great deal of ellipsis.

Functions are assigned solely on the basis of the observer's interpretation. (See chart on next two pages.)

FOREIGN TA

<u>Set</u>	<u>Question</u>	<u>Form</u>	<u>Function</u>
I.	1. If you substituted for the 'u' back in again so you wouldn't have to change your limits, wouldn't you get a different answer?	yes/no	request for confirmation
	2. Like, if you, OK. 'U' equals 4 to the 'x'.	declarative	giving information
	Well, if you substituted back in for 'u', wouldn't the 4 to the 'x' cancels & then you'd have the limits 1-0...again. (v)	yes/no	request for confirmation
	Wouldn't that be a different answer?	yes/no	request for confirmation
II.	1. Can we hand 'em in during your office hour?	yes/no	request for permission
	'Cause a lot of times you come in here & you get problems & I like to go look at 'em for an hour or two & then hand 'em in.	declarative	giving information
	Like today...these problems for 7.1.	declarative	giving information
	2. Do you want 'em now or can we hang onto 'em?	choice	request for permission
	3. Today...just today.	ellipted declarative	giving information
	You're in there at 2:15, right? (n)	tag (rising intonation)	request for confirmation
	Or 3:15. (v)	ellipted tag (falling intonation)	giving information

AMERICAN TA

<u>Set</u>	<u>Question</u>	<u>Form</u>	<u>Function</u>
III.	1. I have a question. How did.... Wouldn't the derivative ....	declarative	giving information
	I don't understand how you get the derivative of se- cant squared.	WH embedded	request for explana- tion
	2. Is it the Chain Rule?	yes/no	request for confir- mation
	3. Then why is it different down at the bottom?	WH	request for explana- tion
IV.	1. What happened to one of your powers of cosine to the 4th over there?	WH	request for explana- tion
	You said it was supposed to be cosine to the 5th.	declarative	giving information
	Did it drop out somewhere?	yes/no	request for confir- mation
	2. Then it doesn't drop out, huh? (↘)	tag (-) (falling intonation)	request for confir- mation
V.	1. At the last step you did with the 3/2's there.	declarative	giving information
	Isn't the 3/2's used to make the denominator a '3x <sup>2</sup> '?	yes/no (-)	request for confir- mation
	2. Uh, why does it stay in the-- equation then?	WH	request for explana- tion
	3. Where did you come up with the 3/2's at now?	WH	request for explana- tion

### C. Discourse Analysis

Obviously, a formal analysis is not very fruitful for several reasons, i.e., the discourse is analyzed at the sentence level only; it's taken out of context; and it's categorized without taking into consideration:

- 1) the relevant situational information (environment, social conventions & shared experience of the participants);
- 2) the 'tactics' (position in the discourse) which include the 'syntagmatic patterns' (what sentences precede and follow the utterances and how they're related); or
- 3) the paralinguistic features of the discourse such as speech rate, pausing, or gestures.

The fact that formal analysis is inadequate is pointed out several times in a book by Sinclair & Coulthard (1975) entitled Towards an Analysis of Discourse: The English Used by Teachers and Pupils:

The approach proposed by Sinclair (1966) was diametrically opposite to Chomsky's. He suggested examining real examples with all their performance features. He focused on questions and answers and suggested that only by examining the context in which an utterance is produced, the presuppositions behind the utterance, the intention of the speaker and the respondent, and the evidence available to a decoder, can one really understand the meaning of an utterance. (Sinclair & Coulthard 1975:2)

...the level of language function in which we are centrally interested is neither the universal functions of language, nor the detailed function of surface formal ordering within the sentence. It is rather the level of the function of a particular utterance, in a particular social situation and at a particular place in a sequence, as a specific contribution to a developing discourse. (Sinclair & Coulthard 1975:13)

Therefore, it was decided that a more productive and representative way of analyzing the data in terms of 'real' student-teacher interaction was to follow an amended version of a system proposed by Sinclair & Coulthard (1975:28/40-44).

The categories (pages 33-34) used in the discourse analysis (pages 35-43) are a composite of 1) categories borrowed directly

from Sinclair & Coulthard; 2) adaptations of categories used in Sinclair & Coulthard; and 3) new categories added for the purposes of this study. For example, the category 're-elicite' was added to account for those cases in which the TA did not respond (or appeared to respond inappropriately) to the student's question so that the student was forced to restate or paraphrase the same question in more specific terms. 'Inappropriate response' is included to account for lack of response or seemingly inappropriate responses (in that context) by TAs which result in re-elicitations. 'Paraphrase' and 'restate' were added to see whether or not TAs used those strategies to check their understanding of students' questions. (This is a compensation skill we teach in the TA course.)

The system used by Sinclair & Coulthard was much more comprehensive because it was designed to look at student-teacher interaction in greater detail. The system used here is much simpler and quite crude in comparison. It does not get at underlying subtleties of the language such as the following example: A statement like "You said it was supposed to be cosine to the 5th. Did it drop out somewhere?" appears to be much more than just an elicitation and seems quite unlike an elicitation such as, "Is it the chain rule?" Even though they can both be interpreted as yes/no questions, they differ a great deal in directness, speaker expectations, etc.

Once again it should be kept in mind that the categories employed here do not have clearcut boundaries nor are they definitive in analyzing the discourse. They are merely intended to represent what could be some of the possible interactive components of student-TA classroom

discourse. Also, much of the support for deciding how to categorize a piece of discourse is based on the occurrence of cohesive devices such as anaphora and coreference. In addition, similarity/difference of content is used to categorize discourse in those cases where cohesive devices seem to be lacking.

### ACTS\*

#### Student Acts

<u>Label</u>	<u>symbol</u>	<u>definition /realization</u>
elicitation	el	Realized by question. Its function is to request a linguistic response, although a non-verbal surrogate may be substituted.
re-elicitation	re-el	Realized by question or statement (unmarked question). Used when the student gets no response or an inappropriate response to his/her question. Its function is to allow the student to elicit again using a restated, rephrased or more specific version of the original question. A question/statement is a re-elicitation if it satisfies all of the following conditions: <ol style="list-style-type: none"> <li>1) Its underlying function (according to the observer) is the same as a previous question in the same question set;</li> <li>2) Its content is the same as (or is very closely related to) a previous question; and</li> <li>3) It does not include notions that signal conclusion or show progression of the discourse like 'then' or 'so'.</li> </ol>

\*This is merely a cover term taken from Sinclair & Coulthard and used here to refer to the discourse functions analyzed in the data.

TA Acts

<u>Label</u>	<u>symbol</u>	<u>definition/realization</u>
inappropriate response	in-resp	Realized by statement and/or non-verbal response to an elicitation. Indicates that the answer:  1) is inappropriate to the question or 2) may be appropriate but not according to the underlying function of the elicitation, therefore it results in student re-elicitation.
loop	l	Realized by 'pardon, eh, again,' with rising intonation. Its function is to return the discourse to the stage it was at before the speech act, from where it can proceed normally.
paraphrase	p	Realized by statement or question. Its function is for the respondent to state (in his/her own words) the question in order to check his/her understanding of it.
restate	res	Realized by statement or question. Same as paraphrase, except the question is stated again more or less in its original form.
check for comprehension	ch	Realized by question. The function is for the TA to ascertain whether or not the student felt he/she understood the TA's answer.

Transcripts of the question sets are included on pages 39-43 along with totals for each of the categories analyzed in the study under each participant. Where necessary, the rationale for analyzing a particular piece of discourse in a certain way is given below. It must be emphasized that the analyses are tentative, often based on the intuitions of the observer, and presented as an exploratory first step in undertaking this type of investigation.

Question Set 1

Wouldn't that be a different answer? is most probably a restatement of the previous question (...wouldn't you get a different answer?) and therefore probably a re-elicitation. Pardon me? is obviously a loop by the foreign TA.

Question Set 2

This set is rather less straightforward than set 1 and thus more difficult to analyze. It appears that S2 asks a question about the homework as evidenced by the pronoun it (it is coreferential with the TA's previous use of homework.) in the first question (Can we hand it in during your office hour?). He then proceeds to ask for the same information in a variety of ways. Unlike S1 in the first question set, he does not restate his question exactly but he does seem to be after the same information, i.e., the TA's permission to hand in the homework during her office hour.

Like today these problems for 7.1. is categorized as a re-elicitation because of its connection to the previous student and TA discourse. These problems immediately refers back to it (previous student discourse) and ultimately back to the coreferent of it--homework (initial TA discourse). Semantically the words homework and problems are often equivalent in the context of a math class.\* The use of like suggests the student is giving an example which refers back to the discourse immediately preceding this: ('Cause a lot...in.) In other words, he's giving an example of a reason (previous statement) for a request for permission (initial question).

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\* This is not always true. Problems could mean difficulties or exercises (homework).



Do you want 'em now or can we hang onto 'em? can be interpreted as a re-elicitation concerning the same topic because of the pronoun 'em (them) which refers back to these problems.

Finally, You're in there at 2:15, right? or 3:15. appears to be another re-elicitation due to the use of anaphora (in there at 2:15) which refers to the TA's office hour and thus back to the original elicit. Also, we can be reasonably assured S2 is still asking for permission and not requesting information about the TA's office hours because of her previous statement (But if you want you can hand in before Thursday--until Thursday.).

Four inappropriate responses are coded for the FTA in Set 2 because: 1) (LAUGHTER) is coded as an inappropriate answer to a request for permission in the first case; 2) If we conclude Like today... is probably a re-elicitation of the original question, then Right. (LAUGHTER) is also more than likely an inappropriate response to the request for permission to hand in the problem for that day during the TA's office hour. 3) The last Right. is also interpreted as inappropriate because Right. is normally regarded as an inappropriate response to a choice question. However, the TA does add the part about Thursday which is an appropriate answer to the question in the sense that, in essence, she's giving the student the option of "hanging onto 'em" until Thursday. However, the student most likely still meant "hang onto 'em until your office hour" because again he says Today. Just today.

### Question Set 3

This first question set for the ATA also seems to be fairly straightforward. Is it the Chain Rule? is probably not a re-elicitation

because the content is different from that of the previous elicitation.

Then why is it different down at the bottom? is not categorized as a re-elicitation because by definition the question contains then (which signals progression of the discourse). Also, the pronoun it (it = the derivative of secant squared) is not coreferential with the it in Is it the Chain Rule? (it = the way you get the derivative of secant squared by using)

Question Set 4

Here it appears that we have two separate student elicitations. The second is more than likely not a re-elicitation because like a previous question, it includes then and therefore is probably not a re-elicitation. The first three questions student S4 asks are analyzed as parts of one elicitation because: 1) it is coreferential in the three sentences\* and 2) There are no pauses for the TA to answer between the three parts nor does the TA attempt to say anything.

The TA's response I was just waiting for someone to catch that. could be taken as an inappropriate response in a formal analysis; however, that is clearly an anaphoric reference to the previous discourse of the student. In order to better understand the implication of the TA's response we have to look at the semantics of catch in this context. The verb here almost certainly means 'to detect' so the TA is most likely referring to someone (a student) detecting what S4 was referring to (the dropping of a power of cosine). However, the TA's answer is ambiguous because he doesn't give a clear 'Yes.' or 'No.' to S4's final question (Did it drop out somewhere?). Thus, it appears that S4 has to make an inference himself and gives it back to the TA for confirmation. Consequently, he says Then it

---

\* at least in one and three

doesn't drop out, huh? (↘). Stating the question in this form forces the TA to give a straight 'Yes.' or 'No.' By posing the question negatively with falling tag intonation, the student is most likely communicating to the TA what he thinks the answer probably is.

#### Question Set 5

In our last question set we can see examples of what are categorized as three separate elicitations. S5 asks two questions with a coreferential it referring to 3/2's and there's a reply inbetween the two questions. However, because the questions are probably not restatements or paraphrases of each other (The first is a yes/no and the second a WH question.) and because then is used, we must conclude that they are probably two separate questions. The TA's first response is inaudible but we can assume it was probably appropriate since S5 was able to proceed with the discourse. In addition, we can assume the TA's answer was most likely 'Yes.' because of S5's following question.

QUESTION SET 1

FTA

Student Discourse

Act

TA Discourse

Act

S1 If you substituted for the 'u' back in again so you wouldn't have to change your limits, wouldn't you get a different answer?

S-el

(NODS)

(NODS)

S1 Like, if you, ok. 'U' equals 4 to the x. Well, if you substituted back in for 'u,' wouldn't the 4 to the x cancels and then you'd have the limits 1-0 again. (↘)

S-res

Pardon me?

T-loop

S1 Wouldn't that be a different answer?

S-re-el

No.

No because this is integration by 'du', right? (↗)  
Not 'dx.'

In this case integrate integrate by 'dx' from 1 to z zero to 1 but in this case integrate integration by 'du' from 1 to 4, right? (↗)

Since the variable is different we cannot change the interval again, right? (↗)

T-ch (?)

Yeah.

(NODS: FACIAL EXPRESSION BLANK AND TONE OF VOICE LOW.)

Totals

el: 1  
re-el: 1

Totals

loops: 1  
in-resp: 0  
res/p: 0  
ch : 1 (?)

QUESTION SET 2

FTA

Student Discourse	Act	TA Discourse	Act
-------------------	-----	--------------	-----

Then, we are finished now.  
 And umm I hope you to hand in  
 homework on due date, right? (↻)  
 Many people hand in homework  
 lately.  
 And so

S2 Can we hand it in during your  
 office hour?  
 'Cause a lot of times you come  
 in here & you'll get problems  
 and I like to go & look at 'em  
 for an hour or two & then hand  
 'em in.

S-el

(LAUGHTER)

(LAUGHTER)++

T-in-resp

S2 Like today these problems for  
 7.1.  
 Ya know.

S-re-el

Right.  
 (LAUGHTER)  
 Yeah.  
 (SILENCE) (LOOKS DOWN & SMILES)

T-in-resp

S2 Do you want 'em now or can  
 we hang onto 'em?

S-re-el

Right.  
 But if you want you can hand  
 in before Thursday--until  
 Thursday.

T-in-resp

Today. Just today.

You're in there at 2:15, right?  
 (↻) Or 3:15. (↘)

S-re-el

(SILENCE ? )  
 (NON VERBAL ? )

S2 (NODS)

Totals  
 el: 1  
 re-el: 3

Totals  
 loops: 0                    res/p: 0  
 in-resp: 3                 ch : 0

QUESTION SET 3

ATA

Student Discourse	Act	TA Discourse	Act
-------------------	-----	--------------	-----

S3 I have a question.  
How did...Wouldn't the deriva-  
tive... I don't understand

Which one?

how you get the derivative  
of secant squared.

S-el

OK.

Is it the Chain Rule?

S-el

Ah, well first you ah  
Yeah, use that or the special  
part of the Chain Rule called  
the Power Rule where you--the  
derivative of any function  
 $f(x)$  to the power 'n.'  
First, bring down the power &  
then you & then subtract 1 from  
it which gives me the secant to  
the 1 & then you multiply by the  
derivative of what's inside & the  
derivative of secant is secant  
tangent. So that's how I got  
that.

Yeah.

S3 Then why is it different down in  
the bottom?

S-el

It's not. Well, see this term  
here is the 'f'. Now this term  
here is a 'g'.  
First, I bring down--I'm differ-  
entiating tangent squared now.  
Bring down the power tangent to  
the first & the derivative of  
tangent is secant squared.

OK. (LOOKS DOWN)

Totals

el: 3  
re-el: 0

Totals

loops: 0                    res/p: 0  
in-resp: 0                  ch : 0

QUESTION SET 4

ATA

Student Discourse

Act

TA Discourse

Act

Yeah.

S4 What happened to one of your  
powers of cosine to the fourth  
you wrote over there?  
You said it was supposed to be  
cosine to the fifth.  
Did it drop out somewhere?

S-el

I was just waiting for some-  
one to catch that.

S4 Alright.  
S4 Then it doesn't drop out,  
huh? (👉)

S-el

No, it didn't.

Totals

el: 2  
re-el: 0

Totals

Loops: 0            res/p: 0  
in-resp: 0        ch : 0

QUESTION SET 5

ATA

Student Discourse

Act

TA Discourse

Act

S5

At the last step you did with the  $3/2$ 's there. Isn't the  $3/2$ 's used to make the denominator a ' $3x^2$ '?

S-e1

(DRINKS WATER)  
Yeah.

Uh, why does it stay in the ah equation then?

S-e1

(INAUDIBLE)

Hmm. Hmm.

Ah, because ah you see a constant can come up front--right up front of a limit. It's like the limit of a constant times some function of 'x'.

is equal to the constant times the limit. So, you can pull it up front if you want but anyways see that whole thing there goes to 1 so if that goes to 1, the  $3/2$ 's times that has to go to  $3/2$ 's.

S5

OK. (NOD)

That seem reasonable?

T-ch

S6

Where did you come up with the  $3/2$ 's at now?

S-e1

OK, ah here's the thing. Down here I have sine of ' $3x^2$ ' over ' $2x^2$ '. I don't know what that limit is, but I do know that I do know this thing here you....

S6

(NO RESPONSE AUDIBLE OR ON TAPE)

Right. (N)

Totals

el: 3  
re-el: 0

Totals

loops: 0      res/p: 0  
in-resp 0      ch : 1



## D. Interpretive Analysis

### 1. Overview

The last part of the analysis includes an interpretation of what happened according to three sources: the observer, the TA and the student. The observer's interpretation is based on how the casual observer might interpret what happened; the TA and the student's interpretations are based on the participants' audiotaped responses to the exchanges upon viewing the videotape. Since only two students volunteered to be interviewed, only two question sets (2 & 5--question 3) are included in the comparison. This section is arranged with the utterance or section of discourse being interpreted as the heading with the three interpretations below it.

#### Key

S/ST = student                      OB = observer                      TA = teacher

### 2. Transcript

#### QUESTION SET 2 - FOREIGN TA'S CLASS

TA: Then, we are finished now. And..umm. I hope you to hand in homework on due date, right? (↗) Many people hand in homework lately. And so... (NODS)

S2: Can we hand it in during your office hour?

OB: The TA had just brought up the issue of late homework and stated that she wanted homework to be in on the 'due date.' One student in the class wanted to know if it would be OK to give her the assignment during her office hour. (At this point we don't know whether her office hour is that same day or not.)

TA: He asked whether he can hand in in my office hour or not.

ST: I said, "Can we hand it in during your office hour?"

S2: 'Cause a lot of times you come in here & you'll get problems & I like to go look at 'em for an hour or two & then hand 'em in.

OB: It sounded like the student was giving justification for why he

- OB: wanted to hold on to the problems & hand them in later (during the TA's office hours).
- TA: Maybe he said because I solve the problems in that time--in the class--he wanna hand in the homework after that class--after 1 hour the class. (= 12:15 ≠ office hour--3:15).
- ST: ...what we were covering was section 7.1 or something. And we had to hand in up to 7.4 so it was like these were problems I had questions about but you get a chance to see 'em but you don't really get a chance to work 'em out. I had a couple hours & I thought if I could hand 'em in during her hour I could look 'em over & then hand 'em in during her office hour, which is in the afternoon on the same day as the recitation--3:00, I think, --3:15.
- TA: (LAUGHTER)++
- OB: At this point there is a long pause during which it looks like the TA doesn't understand the student's question. In addition, since the student's question is hardly humorous, her laughter seems totally inappropriate & indicates she's probably nervous & doesn't know what else to do. Another interpretation might be that since she doesn't answer verbally, maybe she doesn't realize the student is asking a question. Her smile, therefore might indicate she's trying to let him know she heard him. The main thing is that this whole part of the exchange is very ambiguous.
- TA: I think his thought is very reasonable, but I don't like for every student hand in homework later. And because the due date... is actually Tuesday--in the class, so I hope if it is possible every students hand in homework in that time. And if I said, "You may hand in the homework late." then almost every students hand in the homework late & so....

I understood his question, but I didn't understand so exactly. I could catch his meaning but he meant actually the same day of the class--afternoon--but at that time when I heard his question I thought that he was asking--he could hand in the homework after Thursday or something like that. (So I didn't understand exactly what he meant.)

Actually, I will take the late homework if it is handed in in the same week. But I don't like the students to hand in homework late--after the class. And if I said, "Yes, you may." then maybe many students will hand in the homework late. And I don't like that & so I'm just wondering how I can answer to make it--if possible almost student hand in the homework on due date--due time and if they have some problem--important problem--then they may hand in the homework late. In my country, maybe I couldn't say so quickly. Maybe I have some pause.

ST: I don't think she understood it...once in a while when that happens it's just sort of a puzzled look--because it is a request a little bit out of the ordinary from normal class procedure & it's not a question that has to do with a problem or anything--it's a bureaucratic thing. So that might've been a little bit of a problem.

ST: Like today...these problems for 7.1. TA: Right. (LAUGHTER)  
 ST: Ya know. TA: Yeah. (SILENCE) (LOOKS DOWN & SMILES)

OB: Because the TA hasn't given the student an answer yet, he appears to be adding bits of information (Like today...these problems for 7.1) & comments (Ya know.) that indicate he's still waiting for an answer. The only response the TA does give him are "Right." & "Yeah." However, she says them at times & in such a way that they seem more like fillers than like appropriate responses to his statements. Furthermore, it's obvious that he is not making comments that he wants the TA to agree with. Instead, the student is making statements about his rationale for requesting to keep the homework until the TA's office hour with the intention of getting her permission to do so. Since she hasn't answered his request yet, he continues giving her information.

TA: "Today, these problems are several one?" Maybe he mean today I solve many problems or homeworks.

ST: "These problems for 7.1." That's what they were. Well I noticed I went like that because she didn't really give me an answer.... She brought up how she wanted it in on time but I thought, "Well, what does she mean by 'on time'--today or at this hour?" I'm just thinking, "Well, what's the answer?" I guess.

ST: Do you want 'em now or can we hang onto 'em?

OB: Because the TA still hasn't answered his question, it looks like the student is restating his question in more specific terms by using a choice question instead of a yes/no type. He is, in essence, giving her the language she needs to answer his question. All she has to do is to choose one and repeat it.

TA: "Maybe if we have to hand in right now." Something like that.

ST: I said, "Do you want 'em now or can we hang onto 'em?"

TA: Right. But if you want you can hand in before Thursday+until Thursday.

OB: Obviously the TA gave an inappropriate answer, i. e., she answered "Right." to a choice question. This might lead us to think she had no idea of what the student was asking except for the fact that she adds the statement about Thursday. From this it appears

that she does have some idea in mind about what he wants to know. The main thing, however, is that she does finally respond verbally to his question, but she makes no attempt to restate or paraphrase it or to check and see whether she answered what he indeed wanted to know.

- TA: I answered, "You may hand in the homework after Thursday." After Thursday because on Thursday I will solve the problems which include the homework problems and so if they want, they may hand in the homework after Thursday class.
- ST: ...I didn't want to hand 'em in on Thursday 'cause they were done. See, I'm sure what a lot of people do is they go in there & they just write the problems on their paper & hand 'em in... and I do that too but I like to take 'em out & look at 'em to know how to do it. I mean you sorta know how she's doing it, but I always like to take it out & then try to work the problem without looking at it, & then hand it in. I had no interest in handing them in on Thursday. I just wanted to turn 'em in that day--in a couple hours, you know.
- S2: Today. Just today. You're in there at 2:15, right? (↗) Or 3:15. (↘)
- OB: It looks like the student is again narrowing down the options & the language for the TA. In the first part, notice the use of ellipsis instead of the full sentence & the repetition of "today." Even though he uses a tag question with rising intonation, it looks like he knows more or less when her office hour is, so he's not asking for information. Instead, he's reminding her that she does have an office hour that very afternoon when he can bring her the problems. A clue to this interpretation is that he says, "Or 3:15." more as a correction of the first tag question--not because he wants to know which time is her true office hour.
- TA: He said he didn't mean the Thursday afternoon--or Thursday. He just meant today. And today afternoon.
- ST: I knew her hours. I just said that to let her know I was gonna hand 'em in during her hours.
- TA: (SILENCE) (?)  
(INAUDIBLE) (?)
- S2: (NODS)
- OB: The TA is not on tape so it's hard to know what she did non-verbally. If she did answer the student, it was so soft that her voice was not picked up by the microphone. The student does nod, so evidently the TA must have indicated her answer in some way.
- TA: Maybe I didn't say loudly but...I think I said something very

TA: small & I gave him some expression of my face...Maybe I nod my head (up & down). (He was satisfied with the answer.)

ST: ...I think it's important that she's a little bit more open on those kind of things. I think I may have brought up something. I don't think she necessarily had a policy. I don't think she may have even given that much thought--that we were behind & that it is beneficial to go look at the problems. So that might have thrown her a little bit. But she was very flexible on it so....I think I brought up something she just hadn't given much thought.

QUESTION SET 5 - AMERICAN TA'S CLASS

S6: Where did you come up with the  $3/2$ 's at now?

OB: The student's question is related to the previous two questions (Question Set 5 - S5), but it's not a paraphrase or restatement of student 5's questions. The TA had just explained what effect multiplying by  $3/2$ 's had on the whole equation; now student 6 wants to know where that constant comes from in the first place.

TA: Ok. He's asking about the ' $3/2$ 's'--where did I get that.

S5: Well if you see the equation 'tangent  $3x^2$  over  $2x^2$ ' he worked over--he just slammed the ' $3/2$ 's' in the front of it and I wanted to know why he did it--why he did it & why he comes up with an answer like  $3/2$ 's. I'm still kind of a little vague on it, but somehow he pulls it apart in order to turn the bottom half into --bottom ' $2x^2$ ' into 3. I haven't quite figured it out. I'm gonna ask him again--why he comes up with the number ' $3/2$ 's.' I couldn't figure out where he got the number from, and also he just slammed the ' $3/2$ 's' up there & says this is the number & that's your answer. I understand the part where 'y' is equal to 1--the tangent ' $3x^2$ ' over ' $3x^2$ ' is equal to 1. That's obvious. But why he got ' $3/2$ 's' out front--why all of a sudden it works....

TA: OK. Ah+Here's...Right. (N) (The TA's answer is much longer. See Appendix H for a transcript of the whole explanation.) S6: (NO RESPONSE AUDIBLE) (NOTHING ON TAPE)

OB: Basically the TA explains that the constant ' $3/2$ 's' is used to help cancel parts of the equation in order to simplify it. While the TA is explaining, the student is off camera so we have no record of what he was doing during the TA's explanation. The TA does not restate or paraphrase the student's question & does not check at the end to make sure whether or not the student understood his answer and/or felt the TA had answered his question. The TA ends with "Right. (N)", but because of his falling intonation & lack of response from the student, the function of "Right." appears to be a way of marking the end of the discourse rather than of checking for comprehension.

TA: I thought it (my answer) was clear--looking at it now. I sort of wondered at the time whether they really picked up on that point but...I think I answered his (the guy who asked) question.

ST: I think I said something like, "I understand." ...Yeah, I probably nodded my head. I'd say so 'cause I understand it now. Even after I've seen it again now I understand it again. Now that I've seen him do it.

## VI. INTERPRETATION

### Key

ATA = American TA                      FTA = foreign TA                      S = student

The interpretation of the data yields four major findings:

- 1) Based on both discourse and interpretive analyses of the FTA's class as compared to the ATA's class, the FTA's interactive skills were inadequate to successfully cope with student-teacher interaction. The FTA's problems may be indicative of general needs in the interactive skills area;
- 2) Questions that dealt with classroom bureaucracy, i.e., homework, posed more of a problem for the FTA than questions related to the subject matter of the class. Furthermore, the FTA had an easier time coping with a re-elicited whose form was almost exactly like the original elicited than with re-elicitations whose forms deviated considerably from the original elicited.
- 3) Looking only at the face value of student-teacher interaction is insufficient to correctly interpret 'intended meanings,' i.e., what speakers mean by what they say; and
- 4) In order for FTAs to be able to correctly identify what function is to be assigned to an utterance (either their own or their students') they cannot consider only the form. Instead, a 'discourse analysis' based on awareness of and--if possible--experience with the situation, role of the participants, context, organization and cultural expectations of the classroom is necessary.

### A. Documentation of the Foreign TA's Interactive Needs

#### 1. Discourse Analysis

The first conclusion we can make from the data, no matter how we look at it (face value, formal/functional analysis, discourse analysis, or interpretive analysis), is that the FTA experienced difficulty with student-teacher interaction on the day she was taped. If this is representative of her normal classroom behavior, we can infer that her interactive skills in general are probably not sufficient for classroom purposes. The following table illustrates some of the major

differences observed in the two TAs' classes according to the discourse analysis on pages 35-43(Section V):

<u>Student Acts</u>	<u>FTA</u>			<u>ATA</u>		
	<u>Total</u>	<u>Question Set</u>	<u>Number Per Set</u>	<u>Total</u>	<u>Question Set</u>	<u>Number Per Set</u>
total S-elicitations	6	1 2	2 4	8	3 4 5	3 2 3
S first elicitations	2	1 2	1 1	8	3 4 5	3 2 3
S re-elicitations	4	1 2	1 3	0	3 4 5	0 0 0
<u>TA Acts</u>	<u>Total</u>	<u>Set</u>	<u>Per Set</u>	<u>Total</u>	<u>Set</u>	<u>Per Set</u>
T-loops	1	1	1	0	-	-
T-inappropriate responses*	3	2	3	0	-	-
T-restatement/paraphrase	0	-	-	0	-	-
T-check (for S comprehension)	1(?)	1	1	1	5	1

Comparing the results for the two TAs we see that 4 out of 6 'elicits' in the FTA's class appeared to be re-elicitations while none of the 8 total 'elicitations' in the ATA's class appeared so. In addition, there appeared to be 1 T-loop and 3 inappropriate responses in the FTA's class vs. 0 in the American's. Neither TA used restatement/paraphrase to check their comprehension of the students' questions; however, each did check once for student understanding of the TA's previous answer. (There's a problem with the meaning of the FTA's use of "Right?" (↗), which is addressed in Part C, pages 57-58 of this section.)

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\* includes no response where one is expected by the speaker



Based on the number of student re-elicitations (4) resulting from the number of T-loops (1) and inappropriate responses (3) in the FTA's class as opposed to none of these observed in the American TA's class, we can conclude that the FTA's interactive skills were insufficient to deal with student-teacher classroom interaction.

## 2. Interpretive Analysis

The interpretive analysis (Section V., pages 44-48) offers another perspective of the problems the FTA has. According to the casual observer, there are several examples of 'breakdowns,' i.e., where the FTA gives a seemingly inappropriate answer or gives no answer where one is expected, in the interpretation of what happened in her class. (At this time I'll merely document those breakdowns. In the next section I'll discuss what 'really' happened according to each participant's interpretation.)

The first 'breakdown' (See Appendix I, page for a complete transcript of this question set.) is the non-verbal signal which the FTA gives the student who asks about handing in homework during her office hour. (She laughs while he's asking his question.) This first non-verbal response is not too inappropriate by itself; however, coupled with the fact that shortly thereafter the FTA laughs again and then pauses for a long time (LAUGHTER ++) indicates that she may be having some difficulty dealing with the question. The first thought that comes to mind is that she probably doesn't understand the student's question, but she does not want to admit it. Her laughter might be interpreted as a 'filler' to hide her lack of understanding.

The third apparent 'breakdown' occurs when the FTA answers

Right. in response to the student's statement Like these problems for 7.1. Even without doing a functional analysis, the native-speaking casual observer recognizes that the student is most likely still waiting for the FTA to answer his question; he probably does not want her to respond, Right. i.e., to agree with his statement. He then adds, Ya know. to which the FTA replies, Yeah. In a strictly formal sense her answer is appropriate to the student's question; however, again it appears that the student is still trying to obtain the TA's permission. He is probably not trying to get her to agree with his comments.

A much more obvious problem occurs when the FTA again answers Right. in response to what is clearly a choice question. (Do you want 'em now or can we hang onto 'em?) She then proceeds to add information about Thursday (Right. But if you want you can hand in before Thursday--until Thursday.) which might have indicated she was giving him permission to keep the homework longer and thus finally answer his request; however, by his immediate comment (Today. Just today.) and in light of his previous discourse, he clearly doesn't want to keep the homework that long. He merely wants to hold onto it until that afternoon.

Finally, the FTA does provide an answer (non-verbally and/or too low to be picked up by the microphones), to which the student nods, indicating he finally has gotten an answer. However, it has taken him several attempts, due to inappropriate verbal replies and non-verbal responses by the FTA before he finally gets an answer.

The interpretation of the ATA's answer to student 6's question

involves no breakdown in communication (at the surface level). (See page 56 of this section for a discussion of the student's interpretation and possible breakdown at the underlying interpretive level.)

## B. Factors that May Affect Interactive Coping Skills

### 1. Type of Question

If we go back to the discourse analysis (pages 35-43) and examine Question Sets 1 and 2, we can see a major difference in the way the FTA handles the two questions that arise in those sets. She only requires one re-elicitation in order to cope with the first question but requires three re-elicitations to cope with the second. There are at least two possible reasons why she was able to cope more successfully with the first question. One possible explanation is that the first question (If you substituted for the 'u' back in again so you wouldn't have to change your limits, wouldn't you get a different answer?) relates to the course subject matter, whereas the second one (Can we hand it in during your office hour?) pertains to classroom 'bureaucracy.' There is not enough data in this study to accurately judge whether or not the content of the question affects the TA's ability to handle it; however, this observation certainly warrants further investigation.

### 2. Formal Structure of Re-elicits

A second possible explanation for why the first question is easier for the FTA to cope with than the second is related to the surface structures of the two questions. In Question Set 1, S1 restates his question almost word for word like the original version. S2, on the other hand, adds information and changes the form of his question several times until the FTA is finally able to understand what he's after and therefore give him a satisfactory answer. Her

difficulty in coping with the second set of re-elicits may be a result of the way in which the student alters re-elicits so drastically from their original version. Here again more research is necessary in order to investigate this possibility further.

C. Necessity for Searching Behind the Face Value of Interaction

1. Inappropriate Responses

A closer look at the audiotaped interpretations of what went on reveals why the FTA probably answered the way she did and also gives us some interesting insights about the ATA's answer to student 6's question. Let's look at several examples from the FTA's class first.

S2: 'Cause a lot of times you come in here & you'll get problems & I like to go & look at 'em for an hour or two & then hand 'em in. (Section V., pages 44-45)

According to both the observer and the student, the student was asking if he could hand in the problems during the TA's office hours (3:15) because he wanted to look at them after class. According to the FTA, the student wanted to hand in the problem one hour after class. Since the class ends at 11:15 her interpretation would be 12:15, which is not her office hour. Evidently, she interpreted his looking at the problems for an hour as referring to the time he wanted to turn them in.

FTA: Right. Yeah. (Section V., page 46)

After hearing the TA's interpretation of what the student said, "These problems are several one?" it becomes clear why she said Right. She probably thought he was making a comment on the number of problems worked that day and so she decided to agree with him. The FTA did not realize the student was probably giving an example to support his previous question with the intention of getting her

to give him permission to keep the problems until her office hour. As the student says, (Section V., page 46), he's "still wondering what the answer is" at that point.

FTA: Right. But if you want you can hand in before Thursday+until Thursday. (Section V., pages 46-47)

Looking at the underlying interpretation yields an explanation of the FTA's use of Right. to a choice question. Since in her interview (page 46) she only heard the first part (Do you want 'em now?), her response was appropriate to her interpretation of the question. Once again, underlying interpretations yield logical reasons for what are otherwise seemingly inappropriate responses.

ATA: Ah, because ah....Right. (☺) (page 47)

The face value interpretation of this question set in the ATA's class produced no apparent communication 'breakdowns.' Nevertheless, an interesting observation can be made based on the student's interpretation of what went on. Before watching the answer on video, student 6 said he was confused in class and that he was going to ask the TA to explain his reasoning again; however, upon viewing the answer on tape the student stated he'd "had a memory lapse" and that the TA's answer was perfectly clear, i.e., that he understood it completely. There was no apparent re-elicitation or subsequent elicitation, i.e., any requests for clarification, explanation, etc. by S6 later on during this exchange.

## 2. No Response

FTA: (LAUGHTER)++ (pages 45-46)

The FTA says in the interview that she understood the student's question, but "not so exactly." (page 45). As she says, the student

meant the same day and not Thursday; however, in her interpretation, he was asking if he could turn in the homework on Thursday. She said she couldn't have answered the same question "in her country so quickly," (page 46). I interpret this to mean she'd probably have paused at this point if the situation had been in Korea and if she'd been speaking her own language. However, it should be kept in mind that in Korean she probably would have answered appropriately--even if that meant not answering the question but saying the translational equivalent of "That's a good question, but I haven't really given it much thought. Let me see." She would probably not have paused so long and laughed.

FTA: (SILENCE) (?) (INAUDIBLE) (?) S: (NODS) (pages 47-48)

The second case where there is no response and where one is expected is towards the end where the student asks about the TA's office hours. There is nothing on tape; however, the FTA later says she did answer in a very "small voice" (soft?) (page 48). Even though this problem seems more related to hearing than to interaction, it does relate to the issue since an observer's interpretation would be "lack of response" rather than "soft response."

There are no cases of lack of response in the ATA's question sets.

### 3. Ambiguities

There are ambiguities that can also be resolved by looking at speaker/hearer interpretations of what was communicated. There are no examples in the two triangulations presented here; however, one example is the discourse analysis of the FTA's use of the word "Right" with rising intonation. (See page 39.) Looking at the

exchange based on face value only yields at least two possible interpretations. The FTA could be:

- 1) checking for student comprehension of her answer, or
- 2) asking a rhetorical question.

Also, the student's answer is ambiguous. He could be:

- 1) replying to the FTA's question, or
- 2) acknowledging that he understands her reasoning.

Because of the rising intonation of the FTA's question and due to the fact that the student answers it, we might assume that the first interpretation in each case is probably the more logical; however, there are other factors that have to be taken into consideration. First, Keumog used the expression, Right, with rising intonation a total of approximately 20 times during class. Furthermore, in the interview process she mentioned she sometimes expects students to answer her when she uses that expression but they often don't. Only through a process of triangulation can we begin to really get at underlying meanings and even then there are still limitations.

(See Section IV., Part B.)

#### D. Ways Students Ask Questions/Implications for the TA Course

##### 1. Function Over Form

The three analyses (formal/functional, discourse, interpretive) have clearly shown that formal/functional analysis is not sufficient to correctly interpret questions. The tag from Question Set 2 (FTA--You're in there at 2:15, right? (↗) Or 3:15. (↘)) is a good example.

In the formal/functional analysis, (Section V., page 29), it was coded as a 'request for confirmation,' i.e., a true question of a factual nature. The discourse analysis, however, indicated that its

true function was quite different. In the discourse analysis (Section V., pages 36, 40) the question, as viewed in the context of the whole exchange, is interpreted as a way of eliciting permission and also as a way of re-eliciting an answer to a previous question. What's even more interesting is the fact that according to the student's interpretation, the tag did not even fall into the category of 'request' at all; rather, it was a 'polite' way of indicating what he planned to do, i.e., he was stating an intention--not asking for factual information (as the formal analysis suggests.)

## 2. Important Factors in Determining Function

The previous analyses also support the contention that even without access to a student's interpretation of 'intended meaning,'--which we don't normally have access to--it's important to look at several important factors which help determine function, i.e., the true function of an utterance can only be determined when viewed in light of the:

- 1) context of the whole discourse
- 2) role of the participants (student-teacher) and situation (classroom)
- 3) tactics (the position of the utterance in the discourse)--and specifically the syntagmatics (what comes before and after)
- 4) past experience, e.g., having been a student, having been a teacher, etc.

Explaining these factors in detail is beyond the scope of this paper; nevertheless, by looking at the data and the ways in which functions are assigned one can see how important they are.

## E. Problems

There are two major problems associated with the findings of this study. First of all, even though the interpretive analysis was



extremely insightful in terms of getting at underlying meanings and speaker intentions, it's unrealistic for speakers/hearers to analyze discourse in such a way. Our TA's, for example, will never have the luxury of being able to get at motivations behind what their students say and vice versa.

Secondly, even if we did have access to tape-recorded versions of what speakers 'claim' to be their underlying intentions, due to the subjectivity surrounding the interview process (See Section IV., B.2.) we still would have no foolproof way of verifying whether these statements were true or not. Of course, native-speaking TAs are at the same disadvantage in these areas, which is why even native speakers encounter problems with 'faulty' communication. These problems will be addressed in light of implications for TAs and TA courses in the next section (Conclusions).

VI. CONCLUSIONS

A. TA Course

1. The 'Problem' is not only 'Foreign Accent.'

The results of this study demonstrate that 'the problem' is not only 'foreign accent.' (In fact, the study shows that 'foreign accent' may not be a problem at all for this particular TA since her problems did not seem to stem from her non-native accent.) Instead, the results indicate there may be at least two other 'problems':

- 1) The FTA's interactive skills were not adequate to enable her to successfully cope with questions directed to her. Therefore, if we assume she is representative of FTAs, then the problem could be at least partially due to deficient interactive skills.
  - 2) Part of the 'problem' could be undergraduate students-- specifically the way they ask questions. The FTA was able to cope with a question that was restated in almost its original form (Question Set 1); however, it took her several minutes (Question Set 2) to answer a simple yes/no question that was restated several different ways including the use of coreference and ellipsis.
2. Modifications should be made in TA course syllabi/'Fielding Questions' units of TA training courses in order to more effectively meet TAs' interactive needs.

The results of this study show that a post-TA course needs assessment indicated the FTA's interactive skills were inadequate for her to successfully cope with student-teacher classroom interaction. Therefore, we as educators have to: 1) look more closely at the syllabus to determine whether or not sufficient time is devoted to this important need of a FTA and 2) re-evaluate our Fielding Questions unit in terms of additional preparation for the 'real' world. The study has shown how important context, situation, speaker roles and cultural expectations, etc. are in determining function. Thus, a unit such as ours, which requires TAs to field questions that are:

1) asked out of context, 2) only related to classroom content and not to classroom bureaucracy and 3) often asked by other foreign students may not adequately prepare them for 'real life' roles. It's certainly true that no classroom can ever truly simulate what happens in the 'real' world; however, we can certainly set up our classrooms to be more representative of what goes on in the real world, once we have a better idea of what that is.

3. TA training courses should emphasize strategies that help the student prepare for and successfully cope with student-teacher interaction.

Information gleaned from this study has several implications for what we can do to better prepare our students for the interactive role they will play in the real world. They are:

- a) Predict potential problems and discuss how to deal with them.

Students can be forewarned of potential problems such as the bureaucratic questions in set 2 and encouraged to think about issues beforehand so that they will be able to give some kind of appropriate response (even if it's to 'buy time') to student questions. The interpretive analysis revealed that the FTA understood more than her non-verbal responses indicated but that she was unprepared (more cognitively than linguistically) to deal with the problem. Students can prepare by discussing what they can do in a similar situation. For example, one strategy is to use 'stall tactics' like saying, "That's a good question, but I haven't really thought about it. Let me see." or even "Let me get back to you tomorrow."

Now that there are tapes of both American and foreign TAs with transcripts of the question sets, these videotapes can be used as a basis for the type of discussion just described. In addition, they can be used as sources of language use for work in listening comprehension and as examples of 'real' questions students might ask.

- b) Discuss cultural expectations of American undergraduates and ways they might ask questions.

Foreign TAs can prepare themselves to deal with undergraduates by familiarizing themselves with what issues the TAs must deal with in the classroom. This includes familiarization with the grading system, homework and grading concerns of undergraduates, etc. Also, the foreign TAs should be sensitized to the ways in which undergraduates sometimes articulate questions. Here again the videotapes could be used as examples for practice and discussion.

- c) Try to determine speaker motivations; don't listen only for 'strings of words' (surface form).

The interpretive analysis revealed that the surface form often did not correlate with the speaker's intention or motivation underlying the discourse. Thus, FTAs who listen for 'strings of words' and make no attempt to decode speaker motivations will most certainly run into difficulties.

- d) Compensation skills like restating/paraphrasing questions and checking for comprehension after answering a student's question are extremely important.

Even though these compensation skills are emphasized as protection for answering inappropriately, the FTA did not make use of them. This was possibly due to the fact that she

thought she understood perfectly well what the questions were and she thought she gave appropriate answers to them. (The tape, however, can be used to illustrate the point about checking to make double sure.) More research is needed into whether or not this is true of other TAs and why or why not.

e) Work on improving communicative competence.

Problems related to ambiguity like Right? with rising intonation and low-volume answers which leave students wondering what the TA means should be pointed out while TAs are taking the TA training course. The misunderstandings that result should be discussed.

4. More 'real life' examples of language use should be gathered as a basis for the creation of authentic materials for TA training courses.

In light of the dearth of 'real' material for TA training courses and the need for such materials to adequately prepare TAs to fulfill their interactive roles, an attempt should be made to get more 'real life' examples of language use for these courses. One obvious way is to get TAs from other disciplines--especially those with a large number of foreign TAs like economics and engineering--to allow their classes to be videotaped, or even audiotaped, as a basis for classroom materials. Another possibility would be to videotape 'real' student-teacher interaction on a 1:1 basis--in tutorials or before/after class--to be used with those TAs who mainly have 1:1 duties such as TAs who teach labs or give math tutorials. The types of questions gathered could eventually be categorized into a typology of questions asked TAs in various situations (See 'Recommendations

for Further Research' in this section.).

#### B. Research Funds

The second conclusion that stems from the results of this study is that more funds need to be channeled into the areas of research (especially needs assessment) and creation of materials. Large quantities of money are being set aside for courses, but the money is probably not being spent as wisely as it could be. Suggestions for further research are given in the next section.

#### C. Recommendations for Further Research

1. Research into question 'typologies' and creation of a more accurate and sophisticated system of analyzing student-teacher discourse.

The most obvious direction for research directly based on the results of this study indicate a need to gather data on and to classify the types of questions asked TAs in various teaching situations. Several classes from the same discipline could be taped and questions could then be analyzed using a discourse and/or interpretive analysis in order to attempt to devise a 'typology' so student questions for particular situations and also to attempt to devise a more sophisticated and accurate system for analyzing student-teacher classroom discourse. As mentioned previously, the results would be extremely beneficial for TA training course instructors and their students as a basis for preparation for the 'real' world.

In addition to areas related directly to the results of the study, problems that were observed during the course of the videotaping that relate tangentially to the purposes of the study offer potential for future research into the interactive skills area. They are:

## 2. Interactive Problems → Avoidance Strategies → Closed Classes

More needs to be done regarding the TAs who have severe problems dealing with interaction and who decide to avoid problems by creating 'closed classes.' (See Section II, page 11.) Even though Keumog had problems dealing with student-teacher interaction, she did have an 'open atmosphere,' i.e., one conducive to asking her questions and of being reasonably sure of getting an appropriate answer.

## 3. Rapport

One gross observation made about the two classes was that the FTA came in 15 minutes early and said nothing to the students until she started the class. She faced the students with her hands on her desk and looked back and forth, but there was no verbal communication whatsoever. Later, she stated in the interview that she felt there was good rapport, that she does talk to students in the hall, but that since she usually comes late to class she doesn't talk to students before class. The American TA, on the other hand, came in before class, and he joked and talked with students before the class started.

Also, the students in the FTA's class seemed rather quiet during class and didn't seem to respond much. The TA's explanation of the phenomenon was that the videotaping was the reason why. (Students were nervous.) However, in the ATA's class, which was also taped, there seemed to be more verbal and non-verbal communication. As I mentioned previously, this gross observation has to be studied more closely because of problems getting students on tape, intuitions about what goes on, etc. This difference in rapport between the two classes (if it's indeed different) may have several implications for student-teacher interaction, i.e., who initiates questions, when, etc.

These questions could be turned into hypotheses to be tested to determine what differences, if any, exist in the type of rapport generated by an American TA vs. a foreign TA.

#### 4. Reading Non-Verbals--Recognizing Student Satisfaction

The third related area is that of the TA's ability to correctly interpret non-verbal communication--specifically student acknowledgment/response to the TA's explanation. In Question Set 1, for instance, as the observer I felt that the student who had asked the question was not quite satisfied with the FTA's answer. (He seemed hesitant and his tone of voice was low.) Consequently, I would have said something like, "Are you sure I answered your question?" if I had been his TA. However, the FTA felt he was satisfied with her answer. This is yet another area where more research is needed to determine whether or not these intuitions and gross observations are accurate and to gain a better understanding of the part follow-up plays in student-teacher classroom interaction.



## BIBLIOGRAPHY

- Ard, Josh. (1984) "Language Difficulties of Foreign TA's: Beyond Pronunciation." Paper presented at TESOL.
- Bailey, Kathleen, et al. (1984) Foreign TAs In U.S. Universities. Washington, D.C.: National Association for Foreign Student Affairs.
- Barnes, Gregory A. & Alexis Finger. (1981) "ESP: An Intensive Program for Foreign Teaching Assistants." Drexel University. Unpublished paper.
- Clausen, Julie. (1984) "U Tightens Foreign TA English Standards." Minnesota Daily.
- Gillette, Susan. (1982) "Lecture Discourse of a Foreign TA: A Preliminary Needs Assessment." University of Minnesota ESL Working Papers Number 2.
- Landa, M. & W. Perry. (1980) "Classroom Communication for Foreign Teaching Assistants." NAFSA Newsletter. 31:145 & 147.
- Larson, Annette M. (May 2, 1984) "State: Profs Must Brush Up on English." Daily, Volume 85, Number 163.
- Long, Michael. (1980) "Inside the Black Box: Methodological Issues in Classroom Research on Language Learning." Language Learning 30. 1:1-42.
- Oberdorfer, Dan. (June 6, 1983) "Teaching Assistants' Foreign Accents are Issue at 'U'." Minneapolis Tribune.
- Parsons, Adelaide & Lynette Szelagowski. (March 1983) "Communication Skills for the International Teaching Associate at Ohio University." NAFSA Newsletter. p. 114 - 116, 122.
- Sinclair, John McH. & Malcolm Coulthard. (1975) Towards An Analysis of Discourse: The English Used by Teachers and Pupils. Oxford University Press.
- Tu, N. (1983) "A Comparison of the Spoken Discourse of 8 Native and Non-native Speaking Physics TAs." Unpublished master's thesis, University of California at Los Angeles.
- Wallace, John. (11/18/83) "Monitoring and Improving the English Speaking Proficiency of Teaching Assistants at the U of M." Memo.
- Wallace, John & Robert T. Holt. (9/15/83) "Monitoring and Improving the English Speaking Proficiency of Teaching Assistants." Memo.
- Wilkowske, Tom. (1984) "Course Helps TA's Overcome English Problems." Daily.

Videotaping Assignments for TA Course  
Winter 1982/83

1. Introduce yourself as you would to your class. State clearly the objectives of your course, the course requirements and the evaluation procedures.

5 minutes

2. Teach a lesson. Present a problem without using the board. Give step-by-step directions for a procedure that the students will perform (e.g., draw a graph, a picture, a scatter plot, etc.). Do not use the board. Your lesson should have a clear introduction and a conclusion.

10 minutes

3. Teach a lesson. Ask the students questions to check their comprehension. Use the blackboard. Give homework. Summarize your lecture.

10 minutes

4. Teach a clearly organized lesson. Students will ask questions. The teacher will paraphrase each question asked and check the correctness of the paraphrase with the student who asked the question before he attempts to answer it. Summarize the objectives of today's lesson.

10 minutes

5. Teach lesson incorporating any of the previous techniques. The instructor will determine the individual lessons to be taught.

10 minutes

ACTIVITIES FOR THE ORAL PRESENTATION SECTION

WEEK	FIRST HOUR	SECOND HOUR	ANCILLARY TO PRESENTATION
1.	Introduction Explaining interests of a partner	The nature of explanation: keys, types of explaining--Act 3 Introduction to the use of Longman's Lexicon	Preparation of a written transcript, with annotations for keys and types of explanation
2.	Evaluating explanations--Act 4 Preparing and designing explanations--Act 5	Conveying interest and enthusiasm--Act 7, 8 Using evaluations, p. 28 and 29 + others	Evaluate others' performances using scales Prepare written transcript and analyze for structure (Parts 1, 2 of Act 11)
3.	Openings Vocabulary and structure for Openings Step by step explanations	Summaries Vocabulary and structures for Summaries Step by step explanations	Mark and evaluate openings and summaries
4.	Spontaneous explanations--Act 14, 15, and 16	Structure of lectures--Unit Four Vocabulary and structure for transitions	Explain a problem given by the instructor
5.	Simulated grading Preparing appropriate questions	Paraphrasing Answering questions	Paraphrase a passage [lecture topic]. Give a quiz and grade it. Take others' quizzes. Ask and answer questions.
6.	Learning to lecture--Unit 5	Learning to lecture--continued Student expectations	Give an introduction to a long lecture-- Act 31
7.	Advanced question answering	Recognizing moves in discourse	Give a long lecture, but analyze small portions of it.

Texts: George Brown, Lecturing and Explaining  
Tom Mc Arthur, Longman Lexicon of Contemporary English  
Arthur Whimbey and Jack Lochhead, Problem Solving and  
Comprehension

SYLLABUS  
Linguistics 692

SPEAKING, TEACHING, AND MAKING PRESENTATIONS IN ENGLISH

<u>Week</u>	<u>Activity</u>	<u>Assignment for next week</u>
March 28- April 1	Lecture: Introduction to Goals and Methods of the Course  Practice: Student Introductions of each other	Prepare a five-minute talk on "Teaching in My Country"
Apr 4-8	Lecture: Elements of Effective Teaching; The English Sound System Practice: "Teaching in My Country"	Prepare a five-minute talk on "Why Should Anyone Study My Field?"
Apr 11-15	Lecture: Beginning a Class Practice: "Why Should Anyone Study My Field?"*	Prepare the first five minutes of the first class for a course you might teach
Apr 18-22	Lecture: Lecturing Skills and Lecture Language  Practice: First five minutes of a class	Prepare an explanation of a term, process, or concept
Apr 25-29	Lecture: Using Audio-Visual Aids and Handouts  Practice: Give explanations	Continue explanation using audio-visual aids
May 2-6	Lecture: Leading Groups: Discussions, Labs, Reviews  Activity: Explanations with audio-visual aids	Plan a five-ten minute activity that involves the rest of the class
May 9-13	Lecture: Leading Groups: Part II Activity: Class activity	Continuation of the above
May 16-20	Lecture: Evaluative Language; Evaluating and Improving Teaching  Activity: Class Activity	Prepare final ten-minute presentation
May 23-27	Lecture: Student-Teacher Interaction Activity: Role-plays	Continuation of the above
May 30- June 2	Activity: Students' Presentations* Individual Conferences	

\*Videotaped presentations; all others will be audiotaped.

OHIO UNIVERSITY

Each lesson is divided into consonant and vowel work, prosodics (stress, intonation, rhythm, pausing, linking) and classroom dynamics (aspects of interaction with the students, e.g., asking for clarification, taking role, asking/answering questions, making homework assignments, checking student comprehension, giving instructions). Content will vary from term to term as the needs of the TAs vary.

Every other Friday a mini-classroom situation is videotaped.

Format of the Program

<i>Class Type:</i> Content	<i>Group:</i> Meeting (1 hr.)	<i>Individual:</i> Meeting (½-¾ hr.)
Pronunciation Prosodics Classroom Dynamics	M, W, F	
Video Lecture	Every other F	
Individual Problems		Tues., Th.
Individual Texts		Tues.
5-min. Speech Preparation		Th.
Video Analysis		Every other Tues.

DREXEL UNIVERSITY

Three distinct activity areas were foreseen as necessary to achieve these goals: an ESL component (3 weeks for the advanced stream, 4 for the slower stream); a teacher-training component (2 weeks each); and "cultural outings" designed to make the student comfortable in his/her new environment. The students were to meet in class 3 hours each morning, Monday through Friday.

The ESL curriculum depended principally on available printed materials, with the result that our approach was necessarily fragmented. The division of activities for the four-week course (56 contact hours, exclusive of testing and a 1-hour orientation) was as follows: grammar review, 16 hours; discussion, 10; readings on U.S. culture, 8; dialogues, 7; impromptu and extemporaneous speaking, 6; pronunciation, 3; listening comprehension, 3; role-playing, 2; and problem-solving, 1. Although we immediately recognized the need for integrated materials, we lacked the time, and perhaps, the self-confidence to prepare them for the first program.

## COMMUNICATION SKILLS FOR TA'S

Spring 1984

## Syllabus

University of Minnesota  
Syllabus

This course is designed to improve the TA's English language skills in pronunciation, grammar, listening comprehension, and group presentation. TA's will meet as a group for two hours each week to videotape sample presentations, to discuss effective presentation techniques, and to work on English language skills. Each participant in the course will also attend one weekly tutorial hour in which the TA will receive feedback on his/her video or audiotaped presentations and work on individual problems in English language skills. Group activities will be as follows:

- Week 1: Extemporaneous speeches
- Week 2: Defining a term
- Week 3: Explaining a diagram, illustration, or model
- Week 4: Explaining a process
- Week 5: Fielding questions
- Weeks 6,7: Short lecture on culture, leading discussion
- Week 8: Classroom situations
- Weeks 9,10: 10-minute presentations

Participants will be asked to observe classes given by native speaking TA's in their fields. Those TA's who are presently teaching will be observed (by their instructor) twice during the quarter--at the beginning and again near the end. Tutorials for each participant will begin during the second week. In addition to individualized work in English language skills, these sessions will focus on the following group activities:

- |  |   |
|--|---|
| Week 2: Diagnostic interview                         | Week 6: Fielding questions                          |
| Week 3: Defining a term                              | Weeks 7,8: Short lecture, leading discussion        |
| Week 4: Explaining a diagram, illustration, or model | Week 9: Classroom situations, Extemporaneous speech |
| Week 5: Explaining a process                         | Week 10: Final presentations                        |

Section 1: Monday and Wednesday, 3:15 - 4:00, Folwell 46, Ms. Sheryl Holt

Section 2: Friday, 3:15 - 5:00, Folwell 46, Ms. Colleen Meyers

Section 3: Saturday, 9:15 - 11:00, Folwell 46, Ms. Jan Smith

Foreign TA

1. How long have you been teaching this course?
2. Had you ever taught before? For how long? Where?
3. Where are you from?
4. What degree are you working on?
5. Is it OK if I use your name in my Plan B paper?
6. I'd like to talk to the two people who asked questions. Is that OK?
7. Was this class **typical**?
8. What kind of rapport do you feel you have with this class? What did/do you do to develop rapport?
9. How and when do you give students opportunities to ask questions?
10. What techniques do you use when you're not sure what the student's question is?
11. When you answer a student's question, how can you be sure whether or not you answered the question to his/her satisfaction? (verbal? non-verbal?)
12. Do you feel you answered questions today to the students' satisfaction?
13. How can you tell when students are confused?
14. What do you feel your problems are after taking 2 quarters of the Communication Skills course?

Questions About the Interaction

1. What is your name?
2. What exactly did you say there?
3. Were you satisfied with the answer the TA gave you?
4. How did you indicate your satisfaction?

verbal response(s)?

non-verbal(s)

etc.

General Questions About the Class/TA

1. What problems do you have with this class (related to the TA)?
2. Student-teacher interaction:
  - a) Does the TA give you ample opportunities to ask questions?
  - b) Does she/he understand your questions? If not, why?
  - c) Do you generally understand his/her answers? If not, why?
3. What kind of rapport do you feel your TA has with this class? What factors contribute to or detract from that rapport?
4. Do you have any comments on the TA problem in general?



TRANSCRIPTS OF STUDENT-TEACHER INTERACTION

Linguistic/Paralinguistic Information Included or Excluded

A note about the transcripts:

Pause structure/periods of silence - Since extremely long breaks in conversation may be interpreted as breakdowns in communication, both pauses and periods of silence have been included according to the following system:

- + short pause = less than 3 seconds
- ++ long pause = from 3 to 6 seconds
- (SILENCE) = more than 6 seconds

Non-verbal communication - A decision was made regarding the inclusion of non-verbals. Facial expressions, movements of the head (nodding up and down and shaking back and forth), tone of voice, volume and laughter were included because they often give clues to the student's understanding (or lack of it) and/or satisfaction with the TA's answer.

Intonation - The system used here is very crude. Intonation markers--arrows up (↗) or down (↘)--are used only at those points where more than one type of intonation is possible, e.g., tag questions or where a participant used a type of intonation not normally expected in that context or situation. The major purpose for including intonation was to help classify questions according to form and function.

Accompanying blackboard work - This was generally excluded because it was felt to be extraneous to the purpose of the study. However, most of it is on the videotapes and can be consulted.

Reduced forms - Reduced forms ('em for them, ya for you) are used in the transcripts to give a more accurate description of the types of phonological changes which occurred. Only major reductions were noted. The purpose behind including these forms was for the eventual use of the tapes as a basis for TA course materials

#### Technical Problems

One final note on the videotapes: Due to the fact that one is unable to predict exactly when a question will arise, sometimes the speaker (TA or student) is not 'on camera.' Luckily, we generally got the speaker on camera and often we got both the student who asked the question and the TA together, but not always. Also, the sound quality of the tape is generally quite good; however, some parts are a bit hard to hear so I've put a (?) where some doubt exists as to what exactly was said.

## TRANSCRIPT - FOREIGN TA

QUESTION SET 1

TA: (NODS)

S1: If you substituted for the u back in again so you wouldn't have to change your limits, wouldn't you get a different answer?

(VERY SOFT)

TA: (Pardon me?)

S1: Like, if you, OK. u equals 4 to the x. Well, if you substituted back in for u, wouldn't the 4 to the x cancels & then you'd have the limits 1-0 again. Wouldn't that be a different answer?

TA: No. No because this is integration by du, right? Not dx.  
(POINTS TO DU) (POINTS TO DX)

In this case integrate  
(POINTS)

by dx from 1 to 0 to 1  
(POINTS)

but in this case integrate

integration by du from 1 to

4 right? (↗) Since the variable

is different we cannot change  
(VERY SOFT)

the interval again, right? (↗)

S1: Yeah. (NODS: FACIAL EXPRESSION IS BLANK & TONE OF VOICE IS LOW)

## TRANSCRIPT - FOREIGN TA

QUESTION SET 2

TA: Then,+we are finished now.

(Looks at students) And+umm+

I hope you to hand in homework  
on due date,+right?(↗)+ Many  
people hand in homework lately.+

Ans so (NODS)

S2: Can we hand it in during your  
office hour? 'Cause a lot of  
times you come in here & you'll  
get problems

TA: (LAUGHTER)

& I like to go & look at 'em  
for an hour or two & then hand  
'em in.

TA: (LAUGHTER) ++

S2: Like today these problems for  
7.1.

TA: Right. (LAUGHTER)

S2: Ya know. (SHRUGS SHOULDERS)

TA: Yeah. (SILENCE) (BELL RINGS)  
(LOOKS DOWN & SMILES)

S2: (LAUGHS)

(POINTS TO PAPER)

S2: Do you want 'em now or can we  
hang onto 'em?

TA: Right. But if you want you can  
hand in before Thursday+until  
Thursday.

S2: Today. Just today. You're in  
there at 2:15, right? (↗) Or  
3:15. (↘)

TA: (INAUDIBLE?)/(SILENCE?)

S2: (NODS)

## TRANSCRIPT - AMERICAN TA

QUESTION SET 3

S3: I have a question. How did+  
Wouldn't the derivative+ I  
don't understand

TA: Which one?

how you get the derivative of  
secant squared.

TA: OK. Ah,+well first you ah

S3: Is it the Chain Rule?

TA: Yeah, use that

S3: OK.

TA: or the special part of the  
Chain Rule called the Power  
Rule where you+the derivative  
of any function  $f(x)$

S3: Yeah.

TA: to the power  $n$ . First, bring  
down the power and then you+  
and then subtract 1 from it+  
which gives me the secant to  
the 1 & then you multiply by the  
derivative of what's inside+  
& the derivative of secant is  
secant tangent. So, that's  
how I got that. Yeah.

S3: Then why is it+different down  
in the bottom?

TA: It's not. Well,+see this term

S3: OK.

TRANSCRIPT - AMERICAN TA

QUESTION SET 3 (continued)

TA: here is the f S3: OK.

TA: Now this term here is a g. S3: Alright.

TA: First, I bring down+ I'm dif-  
ferentiating tangent squared  
now. Bring down the power  
tangent to the first & the  
derivative of tangent is  
secant squared.

S3: OK. (LOOKS DOWN AT HER PAPER)

QUESTION SET 4

TA: Yeah.

S4: What happened to one of your  
powers of cosine to the fourth  
you wrote over there? You said  
it was supposed to be cosine to  
the fifth. Did it drop out  
somewhere?

TA: I was just waiting for someone+  
to catch that.+

S4: Alright. Then it doesn't drop  
out, huh? (👇)+

TA: No, it didn't.

TRANSCRIPT - AMERICAN TA

QUESTION SET 5

TA: (DRINKS) Yeah.

S5: At the last step you did with the  $\frac{3}{2}$ 's there. Isn't the  $\frac{3}{2}$ 's used to make the denominator a  $3x^2$ ?

TA: + (INAUDIBLE)

S5: Uh, why does it stay in the ah equation then? +

TA: Ah, because ah+you see a constant can come up front right up front of a limit.+ It's like the limit of+a constant times some function of  $x$ +

S5: Hmm. Hmm.

TA: is equal to the constant times the limit. ++ (WRITES ON THE BOARD) So, you can pull it up front if you want+but anyway see that whole thing there goes to 1+so if that goes to 1+ the  $\frac{3}{2}$ 's times that has to go to  $\frac{3}{2}$ 's.+That seem reasonable?

S5: OK. (NODS)

S6: Where did you come up with the  $\frac{3}{2}$ 's at now?

TA: OK, ah+here's the thing.+ Down

TRANSCRIPT - AMERICAN TA

QUESTION SET 5 (continued)

TA: here+I have sine of  $\frac{3x^2}{2x^2}$ .+

I don't know what that limit is,  
but I do know+that+I do know this  
thing here+& you see+as+by a  
change of variable you can let  
 $\frac{3x^2}{2}$  be  $u$ +then that would be sine  
 $u$  over+ $\frac{3}{2}$ 's+ $u$  because ah as  $u$   
(WRITES) ++

This fact here applies at this  
limit as ah+ $x$  goes to 0 is equal  
to 1+ 'cause these are going to  
0 at the exact same rate.+Ah, so  
if I had a  $\frac{3x^2}{2}$  there,+I could say  
that that limit was 1.+I don't  
have  $\frac{3x^2}{2}$  there but I can get one  
there+ if I multiply by  $\frac{3}{2}$ 's+  
just putting a 3 in there 'cause  
the 3--the 3's cancel actually.  
I still have a  $\frac{2x^2}{2}$  in the denomi-  
nator+but it's actually  $\frac{3}{2}$ 's  
times  $\frac{3x^2}{2}$  & that limit is 1 be-  
cause  $\frac{3x^2}{2}$ +as  $x$  goes to 0, the  
numerator+--that thing there--  
is the exact same thing as there  
so I can apply this rule here.  
Right. (↓)