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Randolph Stewart Marshall

ABSTRACT

This thesis discusses the role of conversational mechanisms in doctor-patient interviews. Focussing on two cognitive tasks -- interpretation of symptoms and medical diagnosis -- this thesis demonstrates that principles of ordinary conversation mediate cognitive processes in a medical interview. Contrasting examples illustrate the fact that without an adequate degree of "conversational cooperation," the cognitive tasks of interpretation and medical diagnosis are more difficult to achieve. The results of poor conversational cooperation are shown to be the creation of an inaccurate clinical picture and the loss of clinically relevant information.

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ACKNOWLEDGEMENTS.

This paper is the result of two years of seminar and tutorial work with John Gumperz. He has provided invaluable guidance and support. The tenets of conversational theory discussed in this paper were drawn from ideas developed in his book, Discourse Strategies (1982b). Sarah Freeman was extremely helpful in introducing me to the practical and theoretical aspects of studying doctor-patient communication. Katherine Brown's superb editing touch was greatly appreciated. I would also like to thank Barbara Gerbert for her advice and the use of her videotapes.

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INTRODUCTION.

In a noontime lecture I attended at a tertiary care hospital in the East Bay, 50 or more doctors gathered to hear two financial consultants report on the falling census of patients at that hospital. With tables and graphs on the overhead projector the experts prophesied a loss of income to the physician population in the community. An agitated discussion followed. A place to put the blame was searched for. Finding no quick answers, one doctor finally raised his hand and asked the group whether there was something that the doctors were doing to provide lesser quality care to patients. The financial consultants replied that it seemed to them that manipulating copayments and emergency room charges were certainly important considerations for attracting patients, but that it was the relationship that the doctors developed with their patients that would determine whether the patients would keep coming back.

In the New England Journal of Medicine recently, Norman Cousins reported that he convinced a group of medical students how important the doctor-patient relationship was by reading excerpts from a survey he conducted in Westwood, California (Cousins 1985). Of the responders, 85% had changed physicians in the last 5 years or were considering changing at the time of the survey. Some representative comments from the responders: "I had the impression that my

doctor was not really listening to me. He could hardly wait to get me into medical technology." "I didn't really understand what the doctor was saying and I was too embarrassed to ask." Some of the suggestions offerred: "Medical schools should help doctors in the art of communications." "Doctors should try to anticipate the effects of what they say, especially when their style of informing a patient about a diagnosis may cripple a patient emotionally." "[Students] need increased respect for the importance of direct exchange with the patient. They need to be taught to listen and not just to speak."

As medical students, we sit and listen to lectures on the pathophysiology of disease. We discuss cases and examine patients that demonstrate concepts in the lectures. We consider lab values and try to diagnose the illness from an accumulation of data. And in fact we do get told to listen to the patient. "Diagnosis relies 90% on the patient's history," our instructors say. "If you listen, the patient will tell you what's wrong." We get a class in medical interviewing as well.

The stage is set for change. Economic pressures in the medical community appear to be forcing doctors to rethink the importance of good communication. The public is demanding more from their relationship with doctors. And medical students are admonished to listen to their patients. Yet problems persist. If, as it appears from the attitudes

described above, communication has been recognized as the crux of the doctor-patient relationship, why have solutions to the problem of poor communication been so slow to develop? One limiting factor may be a lack of understanding of the complexities of the communication process.

A variety of investigators have attempted to analyze doctor-patient communication.[1] One group of studies focusses on patient satisfaction and compliance with treatment regimen as indicators of how well doctors are communicating with their patients (e.g. Korsch and Negrete 1972, Davis 1968). While aiming to take an objective look at the outcome of a doctor-patient interaction, this approach cannot address the details of communication within the interaction itself. A more sensitive method might use the dialogue of a doctor-patient conversation as empirical data to point out precisely where and why communication is working well and where it is breaking down.

Sociolinguists have developed a method that approaches social interaction empirically. They take verbal interaction as data for analyzing interpersonal dynamics. As linguists had defined "allowable" structures of language using the sentence as a unit of analysis, sociolinguists began attempting to define allowable structures of verbal interaction by analyzing segments of dialogue taken from ordinary conversation. Conversational "rules" and universal principles of verbal interaction began to be defined (e.g.

Sacks, Schegloff and Jefferson 1974; Grice 1975; Gumperz 1982b). As a systematic groundwork was laid down, sociologists and anthropologists began to apply the new findings to particular interactional settings. Sociolinguistics in the last five years has begun to be applied to doctor-patient interaction. Since social scientists have been the first to enter this arena, most of the work has focussed on principles of conversational structure (e.g. Shuy 1983, West 1984) and the social dynamics of the doctor-patient relationship (e.g. West 1984, Fisher 1983, and Todd 1983).

This thesis is an additional attempt to apply sociolinguistic analysis to doctor-patient communication. The analysis used in this paper builds on structural analyses of doctor-patient interviews (Frankel 1985, West 1984, Shuy 1983) as well as on a "macro-level" interpretive orientation (Cicourel 1982, Gumperz 1982b, Freeman 1986). As a medical student, I have an insider's understanding of the "communicative culture" and medical knowledge of doctors. As a student of anthropology and sociolinguistics I can carry my "emic" data into the laboratory of rigorous social science analysis. The goal of this paper is to elucidate the conversational factors that promote or inhibit effective communication between doctors and patients while remaining sensitive to the objectives of the health care visit -- namely that the patient has come to the doctor to

regain, improve, or maintain his or her health, and that the doctor is there to facilitate that process. I will assume, for the purposes of this study, that the primary goal of a medical interview is the transfer of information: the patient and doctor must understand information that is presented by the other and each must be able to present information that is received and understood. In this thesis I will focus on two cognitive tasks that appear in most medical interviews -- medical diagnosis and the interpretation of symptoms. I will demonstrate, using the texts of actual doctor-patient interviews, that the achievement of these tasks requires information transfer and further, that information transfer requires the establishment of a closely cooperative interaction at the level of conversation. I will offer some hypotheses about what it means to communicate well or poorly within an interview, and show what can happen in an interview when communication is less than ideal.

CONVERSATIONAL THEORY.

When we talk to one another, a process of mental monitoring runs underneath the conversation. It allows us to understand what is being said and formulate appropriate responses. But although we may experience not being able to follow a part of the conversation or not being able to get a

particular point across, we are not necessarily aware of whether our interpretation of what is going on matches that of the other participants in the conversation. The verbal manipulations with which we attempt to gain understanding seem to happen without our having to be consciously aware of how we are trying to orient ourselves, or even, perhaps, that appropriate orientation is our goal.

What seems to occur during the process of conversation is that we offer, receive, and respond to utterances (phrases, words, sentences, etc.) according to three types of ground rules. The first rules are the universal principles of human interaction. By these we know, for instance, that a response is supposed to follow a greeting and that an answer should follow a question. Other rules are culturally bound. Being able to use them appropriately requires that we accumulate experience interacting with members of that particular cultural group. Examples of culturally bound rules include knowing what topics are appropriate for a given setting, knowing how to open or close a conversation, knowing what a pause might mean, or recognizing an appropriate moment for an interjection. A third type of rule is a transient one that can be set up during the course of a conversation - as in the case of being able to substitute the pronoun "it" for an object previously named. What is achieved in the conversation depends upon the use the participants make of these rules.

Conversations can be analyzed by looking at the extent to which the use of the rules allows the participants to achieve a common understanding of what is being said. This is the essence of the analytical method that will be used in this paper.

Conversational rules do not determine what is possible in conversation in the same way that words in a sentence are restricted by grammar and syntax. Even such strongly associated components of a conversation such as an answer following a question or a greeting following a greeting are not inevitable: a request for clarification may follow the question; an intentional silence may follow the greeting. The participants in the conversation where these breaches occur will interpret them "correctly" or "incorrectly" according to the degree to which an understanding of the situation is shared. Sacks offers the following example:

A: I have a fourteen year old son

B: Well that's all right

A: I also have a dog

B: Oh I'm sorry

This sequence might seem non-sensical if one did not know that B was interviewing A for an apartment he is renting out. Without having this knowledge in common, the participants would not be able to understand one another in

this interchange. One can assume that the participants' understanding was developed by the interaction that came before this exchange took place.

One of the most important principles to arise from sociolinguistics is that what is said at any one point sets up expectations for what is to follow. Consider the following excerpts from three medical interviews: (Note: A key to notations used in the transcripts appears at the end of the text.)

(1) Tct6.26 (Marshall)

Dr: does this get you out of doing all dusting at home?

Pt: uh no/ e:h ha

(2) Tct5.65 (Marshall)

Dr: alright.. your activity level down here hasn't changed any/

Pt: not by a great deal/

(3) Tct3.11 (Marshall)

Pt: and I want some more pills (before I leave)
Dr: alright/
well I think I can give you some uh samples uh
that- okay that'll be free/

In the first two examples, a question is followed by an answer and in the third, an offer follows a request. One may conclude from their responses that the second speakers interpreted the first speaker's utterance as questions and a request, respectively.

Analyzing talk using two part sequences can demonstrate how a particular utterance is interpreted. Classic conversational analysis was developed on this premise (Sacks, Schegloff and Jefferson 1974). But because conversation entails constant modification and verification of each participant's understanding of the situation, one must look beyond the two-part sequence to analyze more complex interactions (Gumperz 1982b). Consider the earlier examples with a third utterance added on:

(4) Dr: does this get you out of doing all dusting at home?
Pt: uh no/ e:h ha/
Dr: it should/

(5) Dr: alright..your activity level down here hasn't changed any/

Pt: not by a great deal

Dr: [okay/ beautiful/

(6) Pt: and I want some more pills (before I leave)

Dr:]alright/ well I think I can give you some uh samples uh

[that- okay that'll be free/

Pt: [^good (chuckle)

One can offer an interpretation now that in (4), the doctor had a particular preferred response in mind when he asked the question, that in (5), the doctor is pleased with the patient's reported condition, and that in (6), the doctor's offer met the patient's expectation (and in fact probably satisfied an unstated hope that the pills could be obtained free of charge). While the conversational analyst benifits by knowing the third part to the sequence, it is really the participants in conversation for whom the added information is indispensible. If one looks at the next several lines of example (4), one can see how the doctor and

patient use the information produced by the other to formulate successive moves in the conversation:

26 Dr: does this get you out of doing all dusting at home?
27 Pt: uh no/ e:h ha/
28 Dr: it should/
29 Pt: it should/ sure it should/
30 Dr: preferably you shouldn't even be in the house-
31 Pt: [I don't do any- I don't do
32 any dusting at home/ and I'm not there when anyone
33 does any either
34 Dr: [well that's good that's the point/ I- I- I knew
35 you didn't do any dusting but you shouldn't be around
36 Pt: [yeah
37 Dr: during dusting you see-
38 Pt: I've lost my wind that's what really bothers me/

Viewing this sequence as a whole, one might propose that the question in line 26 was asked in a half joking or pedagogical manner, that the patient took it as a joke (he gives a token laugh in line 27), and that the doctor and patient spend the next 8 lines reorienting themselves (and each other) to the real point of the question - that dust may exacerbate the patient's asthma. In line 30, the doctor

expands on his original question. In line 31, the patient reverses his original answer (that came in line 27) and answers the probable intent of the doctor's question (that dust may exacerbate his asthma). He also responds in line 32 to the doctor's statement of line 30. By line 34, the doctor confirms that the patient has gotten the point and goes on to explain that his original question was intended pedagogically since he knew the answer already. The patient indicates that he did in fact understand this (the "yeah" in line 36). His abrupt topic change in line 38 which overlaps the end of the doctor's statement suggests that the patient at least is oriented well enough to move on to another topic.

This type of line by line analysis of conversation allows one to follow information as it is introduced into the conversation and watch it being worked with by the participants. One can think of conversation as a dynamic process of framing and reframing a perception of the situation according to both a priori knowledge (e.g. a shared understanding of conversational principles) and additional information that can be gathered by verbal and non-verbal input during the interaction itself. The process can be summarized as follows: We hear not simply what is said, but what we believe is implied. Then, acting on our interpretation, we reply. If our interpretation is correct - that is, shared by the person who spoke, the conversation

moves on. If our interpretation is incorrect - does not match that of the speaker - the conversation is disrupted in some way. In example (7), one might propose that the reorienting process of lines 28-36 occurs because the patient's original interpretation of the doctor's question did not match that of the doctor. Their perceptions of the situation are temporarily at odds.

The sociolinguistic method used in this paper can demonstrate how closely the participants' perceptions of the situation match. The analysis proceeds by first identifying indicators of ŧconversational cooperation' within the transcript. Such indicators include smooth transitions in speaking turns, even rhythm or pacing, cooperative sentence building, ŧduetting' (making similar statements simultaneously), and receiving confirmatory utterances to summarizing statements (Tannen 1984:54-94). Indicators of conversational non-cooperation include an absence of these factors. In interviews where conversational non-cooperation occurs, there may be breaks in rhythm, abrupt changes in topic that the other participant does not follow, and overlapping utterances that disrupt the flow of talk. Examples of conversational cooperation and non-cooperation will be demonstrated in the transcripts in this paper. Conversational cooperation will be shown to mediate information transfer in medical interviews. Conversational

non-cooperation will be shown to result in confusion, inaccuracy and loss of information.[2]

Participants in a conversation use their understanding of conversational ground rules to communicate with one another, yet communication in a medical interview is not just a question of using language well. Other factors influence the interaction between doctor and patient which give the medical interview constraints that are different from those in everyday conversation. Some of these will be considered here.

First, the doctor and the patient enter the interview with different knowledge of the illness. This idea has been discussed by Kleinman (1980), Cicourel (1982), and Good and Delvecchio-Good (1980). The doctor's knowledge of the illness comes from the academic training of medical school, clinical experience, and knowledge of the patient's medical history (drawn from the patient's chart, from previous visits, or elicited during the interview). The patient's knowledge of the illness comes from personal knowledge of his or her health, as well as from second hand sources such as friends' and relatives' experiences, medical articles, and the popular press.

As an extension of knowledge differences, participants bring beliefs and expectations to an interaction. The expectations may be modified during the interaction itself

through the verbal and non-verbal input that comprises the conversation. Cicourel (1982), for example, has shown how a patient's beliefs about her illness and expectations for her medical encounters affect the way she interacts with the doctor. Conflicting test results and prior experience with medical bureaucracy made this patient suspicious about the validity of the information that the doctor offerred and resulted in her challenging the doctor's competency.

Another influence on communication is the role each participant plays. For the doctor, roles of healer, scientific investigator, teacher, student, and confidante may all be active at different points in the interview. Each role has its own communicative perogatives and constraints. The roles are constantly shifting, and with them, the participants' use of conversational tactics shifts as well. A study by Tannen and Wallat demonstrates the role shifts a pediatrition performs during one interview; she plays care-giver to the patient, consultant to the mother, and medical reporter to a videotape player recording the interview (Tannen and Wallat 1983). A role shift that occurs in many medical interviews is in the transition from the informal interaction that often opens an interview to the more formal task of finding out why the patient has come to the doctor. The following excerpt demonstrates this. The doctor and patient have been discussing fishing. The patient is about to give the doctor a piece of his old

equipment. (Note: Figure 7 is a key to the notations used in the transcripts.)

tct9.40 (Marshall)

40 Pt: and- and here's part of the this goes on the reel to hold it onto your rod if you want-

41 Dr: okay/ that's very nice of you/

42 Pt: did you-

43 Dr: [well-

44 Pt: did you clean that old spinning reel up or-

45 Dr: u:h no I haven't cleaned it yet- been so busy I haven't had any time - chance to do that-

46 Pt: yeah I know I didn't get a chance to talk to you either from when I been over at the chapel/

47 Dr: [well that's one of the reasons that you're here today is that we can talk- and also

48 Pt: [yeah

49 Dr: see how you're ^doing/ I understand you're not feeling very well a couple of days ago/

50 Pt: mmm-hmm I was down..I think I only worked three days in the chapel/ down you know I told you before I was having diarrhea all went on for three months/ they finally got it stopped over there...Sunday/

51 Dr: and how did they get it stopped/

52 Pt: Kaopectate but they gimme half a cup/

The interview moves on from here to a discussion of the patient's various complaints. From friendly, informal talk, the doctor and patient have altered their roles to establish an expert-advice seeker relationship. The key point is that the transition is negotiated smoothly, and that both participants recognize that the change has occurred. New conversational features appear in the structure of the conversation after the transition to medical talk such as the question and answer format that characterizes much of medical interviewing.

The text contains evidence of the way this transition is negotiated. The doctor may have been attempting to initiate a shift to medical talk as early as line 43. His "well-" which is overlapped at this point by the patient's utterance, is the same pitch and emphasis as the "well" that occurs during the topic change in line 47, suggesting that the two are voiced with similar intent. In addition to the words themselves, a paralinguistic feature that may have cued the patient that roles were shifting is the higher pitch the doctor uses on the word "doing" in line 49. The higher pitch is maintained through the beginning of the next sentence and then gradually falls back to normal. Because this pitch change occurs where it does, the patient receives a non-verbal cue that complements the literal meaning of the words. Through the verbal and paralinguistic interaction, doctor and patient cooperate to negotiate the transition.

Both understand that a role shift has occurred and alter their conversational tactics accordingly.

Various bureaucratic constraints may influence communication within the interview as well (Freeman 1986). Time pressure may cause the interview to be rushed or cut short. The threat of medical malpractice encourages doctors to conduct procedures, including interviews, according to "standards of practice" for that setting. Constraints placed on doctors from third party payers, including the new requirements to place medicare patients in a particular Diagnostic Related Group (DRG) may influence the process of diagnosis.

Conversation in a medical interview is a complex, largely unconscious process that requires the active involvement of both participants. It occurs in a multi-faceted interactional environment constrained by differences in knowledge, varying beliefs and expectations, shifting roles, and bureaucratic procedures. In order to direct my analysis of the communication between doctor and patient, I will focus on two cognitive tasks that occur in most medical interviews: the interpretation of symptoms and the process of medical diagnosis. The first cognitive task I will consider is the interpretation of symptoms to form a conceptual understanding of the illness.

COGNITIVE TASKS IN A MEDICAL INTERVIEW.

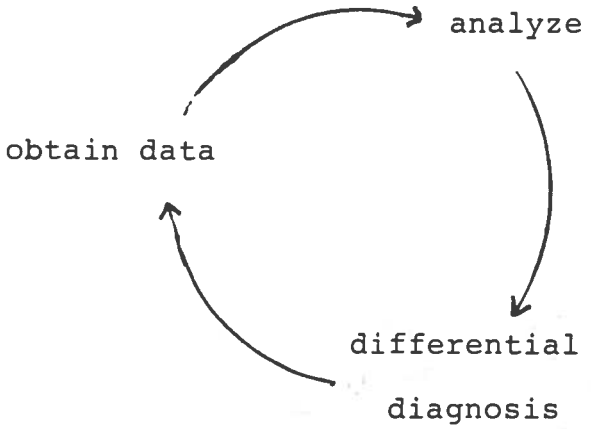
Anthropologists have demonstrated the importance of understanding the patient's perception of illness in the delivery of successful medical care. Work by Kleinman (1978), Good and Delvecchio-Good (1980), and others have shown that illness can be understood in different ways by the different participants in the medical encounter, especially when the doctor and patient come from different cultures. The reality of the illness may be constructed by the patient according to culturally bound beliefs that are informed by the knowledge he or she has gained through interaction with health and illness in his or her own community. The patient's perception of the illness -- including its etiology, its classification, and its prognosis -- may be at odds with the doctor's perception which has been built largely from academic training and clinical experience. In cross-cultural case studies presented in the literature, it has been shown that when doctor and patient are unable to reach a common understanding of the illness, there are detrimental consequences to the patient's health status (Kleinman 1978, Weaver and Sklar 1980). Management of the illness was more difficult and both patient and practitioner became frustrated and discouraged.

Differing perceptions of illness are not limited to cross-cultural encounters. The New England Journal of Medicine recently reported on some "common sense" health beliefs among the educated middle class in the United States (Gillick 1985). From the broad spectrum of beliefs reported within this culture, one might conclude that restricting investigations of health beliefs to cross-cultural data would neglect the idiosyncratic perceptions of individuals. Symptoms may be grounded in cultural beliefs, but their meaning is modified by individual experience, regardless of the cultural group to which the individual belongs. Since the health care visit in this country is largely a one-on-one encounter, it is important to try to understand the perceptions of illness operating in individual practitioner-patient interactions.

Good and Good (1980) address the issue of discordant beliefs held by patient and practitioner and recommend a reorientation of clinical practice. They argue that human illness is fundamentally semantic or meaningful to the individual. They argue further that clinical practice is inherently interpretive or hermeneutic, as is represented for instance by the physician's task of deducing an underlying biological disease from subjective and objective manifestations. Therefore it is within the cognitive capabilities of the medical profession to understand the patient's perception of the illness. The clinician's

imperative, they say, is to decode the patient's semantic network of the illness and arrive at appropriate therapeutic responses. This is an important concept, yet putting it into practice may require a more detailed understanding of the process by which it may occur. What I will argue in this paper is that interpretation as the Goods call for does not happen in a vacuum; the interpretive task of decoding a semantic network cannot be acheived without interpretation occurring first at a more fundamental level -- at the level of conversation within the interaction itself.

Medical diagnosis is another cognitive task that occurs in many medical interviews. Physicians are trained in medical school to approach diagnosis in a highly structured way. Clinical problem solving as taught in medical school and practiced by physicians is derived from the scientific method (Harvey et al. 1983). It requires the iterative task of proposing a hypothesis, devising an experiment to test the hypothesis, analyzing the results of the experiment and beginning the process again. In a medical interview this takes the form of 1) obtaining data by asking questions and examining the patient, 2) analyzing the data, 3) forming a hypothesis that includes many possible explanations (differential diagnosis), and 4) narrowing the hypothesis by beginning the cycle again. This process can be shown schematically:



What constraints does this place on the doctor's way of communicating? In the process of obtaining data for analysis a doctor listens for and attempts to elicit key words and phrases - symptoms that fit the physician's preexisting knowledge of the disease. If a doctor suspects a patient of having appendicitis, for instance, he or she listens for phrases that match the classical symptoms: pain originating around the umbilicus, shifting to the lower right quadrant of the abdomen, hyperesthesia (increased sensitivity) of the overlying skin, anorexia (loss of appetite), nausea and vomiting. Though the patient's narrative may include other information such as "my father had a pain like this two weeks before he died of cancer of the colon" and "my wife is out of town on a business trip," the physician working according to the clinical model plucks the "relevant" symptoms out of the patient's narrative to form a differential diagnosis. If the differential

diagnosis includes both appendicitis and gastroenteritis (infection of the intestinal tract), the doctor might then ask whether diarrhea is associated with the pain. If it is, gastroenteritis is the most likely diagnosis and there is no medical emergency. If there is no diarrhea, appendicitis is likely and the patient is a candidate for immediate surgery.

Because the physician is looking for a specific set of data and is following a decision tree in his or her own head, the questioning strategy and the questions' relevance to the patient's illness may seem to the patient abstruse. Cicourel found this in his observations of a series of interviews:

> The questions posed may not include sufficient contextualization to facilitate a response or may generate enough hesitancy by the patient to motivate the interviewer to rephrase the question, ask a different question, or produce an answer by the patient that is seen as inadequate by the interviewer. (1975)

Analysis of interviews will demonstrate how this cognitive system can affect the accuracy and efficiency of the interview. It too will be shown to be mediated at the level of conversation.

Medical diagnosis and interpretation of symptoms are both important to the outcome of the medical interview. The hypothesis being put forward in this thesis is that conversational cooperation is a prerequisite for information

transfer and since, in a medical interview, information transfer is a necessary component of medical diagnosis and interpretation of the patient's symptoms, effective accomplishment of these tasks reqires the establishment of an adequate degree of conversational cooperation between the doctor and patient. I am suggesting that if a doctor can "use" conversation proficiently, he or she will be able to perform medical diagnosis more effectively. If the doctor can use conversation proficiently, he or she will be able to obtain a more comprehensive understanding of the illness. Without effective communication occurring at the conversational level, the cognitive goals of the medical interview will be more difficult to achieve. Confusion, inaccuracy, and information loss will result.

I will now present the textual evidence for these hypotheses. The first two interviews consider the process of the interpretation of symptoms. The second two consider medical diagnosis.

ANALYSIS OF TRANSCRIPTS.

The transcripts analyzed in this thesis are drawn from a collection of 215 doctor-patient interviews videotaped for purposes of analyzing diagnosis and treatment of chronic lung disease (Gerbert & Hargreve in press). The

participants knew they were being videotaped, but studies showed that the presence of the camera and operator made little difference to the interview (Gerbert et al. 1982). Doctor and patient are both white with English as their first language. This makes communication problems arising in the interview more likely to be attributable to the doctor-patient interaction per se, rather than to an additional language barrier. The doctor in both interviews is a general practitioner who has seen the patient at least once before.

-- Insert Figure 1 - TRANSCRIPT #8 --

The doctor opens this segment with a question about the patient's cough (lines 161-163), a topic he had introduced earlier. In responding to the doctor's question, the patient mentions that the cough prevented her from lying flat (line 166). The doctor breaks in at this point, with no pause between the patient's last word and his first and asks her to give a reason for not being able to lie flat (lines 167-168). She states that lying flat caused her to begin coughing immediately (line 170). She then goes on to narrate a story about her coughing causing her husband to yell at her (lines 171-173). The doctor persists with his inquiry about lying flat, asking whether she wakes out of a sound sleep coughing (lines 174-176). The patient responds

that the coughing kept her from getting to sleep (lines 177-180). The doctor repeats his question about waking out of a sound sleep (lines 181-182), and this time, the patient agrees (line 183). The doctor then probes for more symptoms (lines 187-188), which the patient initially denies (line 189), but then agrees that there was some pressure in her chest (line 196). The doctor again attempts to elicit more symptoms (line 198) but effectively limits the patient's response by his tag question "or do you remember?" which in an interview often results in the parroting back of an agreement (lines 197-199). The doctor then asks when her last episode of waking out of a sound sleep with pressure and trouble breathing occurred (lines 200-202). The patient replies that it has not happened for two and a half weeks and then adds that she has had no pressure since the cough disappeared (lines 203-206). The doctor asks whether the problem occurred nightly (lines 207-208), to which the patient responds positively (line 209). The doctor sums up the situation by stating that "that" has gone away as the cough has gone away (lines 210-211). The patient confirms this assertion (line 212).

Now let us look back over this segment. The first thing to realize is that the doctor is trying to elicit the symptoms of congestive heart failure. A classic symptom, known as paroxysmal nocturnal dyspnea, is defined as waking up suddenly in the middle of the night unable to catch one's

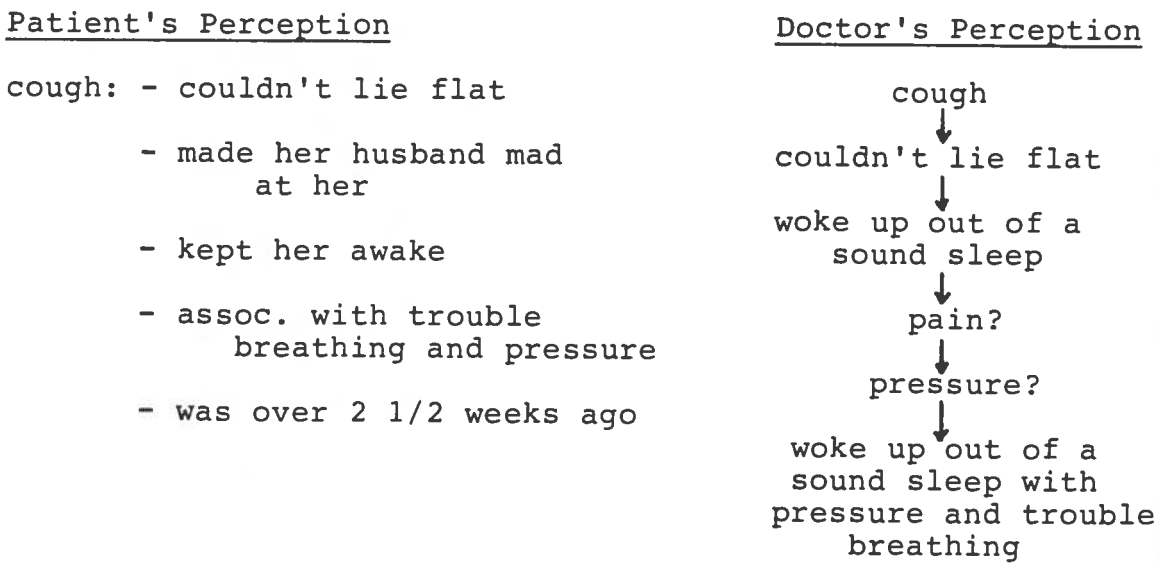
breath. There may be an associated symptom of chest pressure. The doctor's pointed questioning filters out all the information offerred by the patient except statements that might confirm a clinical picture of heart failure. With the exception of her initial statement about not being able to lie flat, the patient produces the sought after symptoms only after persistent and restrictive questioning by the doctor. By looking at the information that the patient offers on her own and the line of questioning pursued by the doctor, we can identify conflicting perceptions of the illness operating simultaneously in the interview.

For the patient, the cough meant that she couldn't lie flat. It made her husband mad at her, kept her awake, was associated with trouble breathing and heavy chest pressure, and it has not been a problem since she recovered two and a half weeks ago.

For the doctor, the cough led him to the fact that the patient couldn't lie flat, that she woke up out of a sound sleep whith chest pressure and trouble breathing, and that this constellation of symptoms could mean that the patient has chronic heart failure. A persistant cough, by the way, does not fit the classic presentation of heart failure. The doctor separates the cough from the rest of the symptoms by noting that "that" (the symptoms of heart failure) has gone away "as" the cough did (line 210). Figure 2 illustrates

the two perceptions of illness in schematic form. I have represented the doctor's model as a linear progession and the patient's model as a list to indicate the difference in the way the models emerge in the interview. (See Figure 2.)

Figure 2. Conflicting perceptions of the illness.



What are the consequences of maintaining disagreeing perceptions of the situation? The immediate consequence, which I have just demonstrated, is that the doctor has created an inaccurate clinical picture of the patient's illness. His question near the end of the segment -- When did you last wake up out of a sound sleep with pressure and trouble breathing? -- disagrees with the patient's

interpretation that prior to two and a half weeks ago, she had had a cough that prevented her from lying flat, annoyed her husband, and kept her awake. The doctor alters the picture of the illness she presents even further when he returns to the topic a few minutes later and asks:

line 236 Dr: yeah [12 sec] okay is there any other time you get this pressure business in the chest you were saying had been wak- had been waking you up?

The patient never stated -- in response to the doctor or on her own -- that chest pressure woke her up.

In addition to the inaccuracy, there is also loss of information. By not responding to some of the information the patient offers, the doctor will not be able to use it in planning a treatment regimen. As research on explanatory models has shown, this situation can produce frustration and unsuccessful management of the illness. Follow-up data on this interview are not available to assess the health status of the patient. However, a debriefing session followed the videotaped encounter in which the doctor and the patient were interviewed individually (Gerbert & Hargreve in press). One of the questions that they were asked was: For each of the following symptoms, please tell me if you/the patient did or did not have that symptom today. Responding to this

question, the doctor and patient disagreed on two symptoms: "cough" and "general worsening of lung condition." It is likely that disagreements on the presence of these symptoms will be manifested in differences in opinion about what treatment will be useful.

This segment is not an isolated occurrence. Later in this interview, the doctor and patient run through a similar pattern, the doctor this time probing for symptoms of a heart attack (transient chest, jaw and arm pain) and the patient offerring incidents of pain in different parts of her body that she associates with other events in her life -- chest pain following a breast exam, jaw pain following a trip to the dentist (which, incidentally, resulted in her husband getting mad at her for taking pain medication). The doctor eventually abandons the line of questioning after similarly altering the patient's statements and losing information as occurred in the earlier segment.

It has been shown that doctor and patient can proceed through an interview working with conflicting perceptions of the illness. Let us now consider the conversational mechanisms that allow this phenomenon to occur.

It was stated earlier that conversation is an interpretive process which requires that participants continually frame and reframe a perception of the situation, using verbal and non-verbal cues to maintain appropriate orientation. Conversational cooperation was said to be a

prerequisite for interpretation to occur at a conversational level. The Cough vs. Heart Failure segment has two lines of evidence which suggest that conversational interpretation is failing. The first concerns turn-taking. Following the response to his initial question, the doctor inserts a request for a speaking turn ("u:m" in line 165) before the patient has completed her answer. Fortunately for him, this attempt is not successful, because the symptom he is interested in follows his attempted interjection. In other instances, however, the doctor cuts off the patient's answers before they are completed (lines 186-187, 189-190, and 193-194). In two of these instances (186-187 and 193-194) the interruptions changed the topic.

Another sign of conversational non-cooperation in this segment is the difference in discourse structure. The patient uses a narrative strategy to offer information about her illness, as in her story about her husband getting mad at her (lines 170-173) and her description of dozing off and sliding up on the pillow (lines 177-180). In contrast, the doctor pursues restrictive questions that request "either/or" or "yes/no" responses (lines 174-175, 181-182). As a consequence of mismatched discourse strategies, each participant is unable to use the cues the that other produces which indicate what is being attempted in the conversation. The patient receives no feedback from the doctor that can tell her whether or not the information she

is offerring is being heard or understood. From the doctor's perspective, he must repeat himself and ignore some responses to his questions in order to elicit the answers he is looking for. The results of persisting conversational non-cooperation are inaccuracy and information loss.

For purposes of comparison, I will now turn to an interview in which a high degree of conversational cooperation occurs. (See Figure 3.)

-- Insert Figure 3 - TRANSCRIPT #6 --

This segment opens with the doctor inquiring about the relationship between the patient's wheezing and his exercising (lines 156-157). This is a topic which the patient had initiated early in the interview (38 Pt: I've lost my wind and that's what really bothers me/). The doctor requests an assessment of what happens during physical exercise (line 159) and the patient, after a pause, responds that he wheezes (line 160). After a pause of a similar length, the doctor asks whether the patient has ever tried using the inhaler before exercising (lines 161-162). The patient pauses again and responds that he hasn't, but it is an idea worth considering (lines 163-165). The doctor then brings the general point of wheezing and exercise to a consideration of the patient's particular situation (the patient had previously spoken about swimming as his usual

form of exercise). In responding, the patient generalizes back to the doctor's original question about "any physical exertion" (lines 166-168, and earlier, lines 155-156). At this point, the doctor, in a louder voice, begins to propose a solution to the patient's problem (line 169), interrupting himself to elicit a confirmation of the frequency of the patient's present use of the inhaler (lines 169-170). Following confirmation from the patient (line 171), the doctor offers an assessment of the patient's condition as being linked to physical activity (lines 172-173). Then, after a substantial pause, he proposes a treatment that the patient might try (lines 173-174). The doctor does not complete his sentence here; he leaves it dangling. The patient picks up the cue and extends the doctor's sentence (line 175). He receives confirmation that his extension is correct as the doctor overlaps his utterance and mirrors it (lines 176-177). Following another confirmation for the doctor that the patient is following him (line 178), the doctor finishes the last part of his sentence (line 179). Another instance of cooperative sentence building follows as the doctor finishes out his argument about the benefits of using the inhaler before exercising (lines 182-185). The segment ends with another confirmatory utterrance by the patient (line 186).

Whereas the Cough vs. Heart Failure segment showed conversational non-cooperation resulting in inaccuracy and

information loss, this segment contains evidence of close conversational cooperation. The rhythm or pacing is even. The participants cooperate in building sentences. They display "duetting." They repeatedly receive confirmatory utterances in response to assessments. With regards to the principles of conversation discussed previously, each participant is able to use the other's utterances to build on what has come before and in doing so keep oriented to the ideas that are being developed. As a consequence, the proposal that the inhaler be used before exercise is offerred by the doctor and is received and worked with by the patient without the inaccuracies and information loss that plagued the other interview. Furthermore, the doctor uses the patient's perspective of the illness -- that losing his ŧwind' is the most important aspect of his asthma -- in proposing a treatment plan. Thus he is able to interpret the semantic network of the patient's illness and suggest a therapeutic regimen that is both appropriate medically and meets the needs that the patient has presented.[3]

Interpreting the patient's semantic network is one cognitive task that faces doctors in a medical interview. Another task is that of medical diagnosis. In analyzing the next two transcripts, I will present evidence for the way in which conversational mechanisms mediate this task.

Both of these segments are the openings of interviews. From the start, they differ in the degree of conversational cooperation that the participants are able to develop. The difference is manifested within the opening segments as well as in the efficiency and effectiveness of information transfer at later points in the interviews.

In the first interview, there is very little evidence of cooperation.

-- Insert Figure 4 - Transcript #7 --

The patient opens by asking whether her potassium level is low (line 1). The doctor answers the literal meaning of the question, then goes on to offer a plan to do "that" today, too. From this response, two points can be made about the way the doctor is communicating. The first concerns his use of an unassigned pronoun. The patient may or may not know what "that" refers to, but in either case no elucidation of the word takes place and in fact, no further reference is made to a procedure involving potassium levels throughout the rest of the interview. Later, the doctor repeats this occurrence, leaving "before" of line 8 unreferenced in the text. One may offer an alternative explanation that the doctor and patient are so familiar with the situation that explication is unnecessary, however this

would be in marked contrast to the text of other interviews in which either pronouns are referenced or there is evidence that both participants are using unassigned words to mean the same thing. Leaving words ambiguously referenced increases the potential for confusion. The fact that no attempt at clarification is made suggests that the participants are unaware of the ambiguity or that they are unable to develop the cooperation necessary to rectify it.

The second point about the doctor's communication strategy is that the doctor is making an assumption about the intent of the patient's first question. By answering with a plan to do "that" today, he can be said to be answering an unstated intent of the patient's question (e.g. Can you do something for my low potassium today?) Taking conversation to be a continuous framing and reframing of perception of the situation as the conversation proceeds, answering the intent of a question requires confirmation from the first speaker as to whether the question's intent was interpreted correctly. In this exchange, however, no confirmation is sought or offerred. The doctor moves immediately on to a question about the drug, Moduretic, in lines 2-3. (There may be additional unexplained information being presented here: the patient may not know that Moduretic can affect potassium levels). Because the doctor does not attempt to engage the patient's participation in making clear the intent of her statement, and neither does

the patient offer explication, the doctor is forced to carry the burden of interpretation alone.

A little further on, the doctor mentions the potassium level again (line 7), this time offering an explanation of why the potassium is low (line 8). A notification of a treatment plan follows. His statements at this point suggest that he is now attempting to reinterpret the patient's original question to mean: Why is my potassium low? Will I need further treatment? Again, no feedback occurs; the doctor moves immediately on to ask a new question, about Slo-K.

Near the end of this segment the doctor reintroduces the topic once more (lines 17-24), this time wandering through several aborted attempts to give significance to the patient's potassium level, though no request for such an explanation has been explicitly requested. During this seemingly undirected monologue, the doctor moves from a consideration of the effects of the patient's condition (3.3 will never bother you) to some projections as to what her symptoms might be (but you might feel a little bit better you might have some uh), finally retreating to a bald prediction of the probable trend of her lab value over time (I would imagine that would go up slowly over the next uh uh...six months or so).

One might again offer an alternative explanation, crediting the doctor with offerring a lot of information to

the patient during the interview. If one were to consider only the medical knowledge that might be in the doctor's head, one could trace the logic of the doctor's discourse: the patient's potassium levels are low; the Moduretic increases potassium levels by decreasing potassium excretion; balancing the potassium raising properties of the Moderetic with the patient's low levels, maybe I ought to consider the possibility of adding Slo-K, a potassium supplement. Regardless of the soundness of the doctor's medical logic, however, from a conversational perspective, this type of unilateral discourse precludes the opportunity for both participants to engage actively in the interpretive process. Since one hypothesis being developed in this paper is that conversational cooperation is a prerequisite for information transfer, one might predict that the doctor's behavior would disrupt the exchange of information in this segment. In fact there is evidence of disruption in the text. The doctor opens a line of questioning about how much Slo-K the patient has left (lines 11-12). He then closes the topic abruptly in line 16 (okay/ okay) and moves on to a new topic of checking the patient's blood pressure. Five seconds later the patient, apparently unclear as to the significance of the Slo-K questions, reopens the topic in line 18. The reopening is followed by a minimally informative response (line 19) and then by the final monologue about the significance of her potassium level

discussed above. This exchange suggests that for the patient, the doctor's statements do not contain sufficient contextualization for information to be transferred clearly. Cicourel (1975) has shown the problem of insufficient contextualization to arise commonly in doctor-patient interviews. As discussed earlier, a contributing factor in inadequate contextualizaton may be the cognitive strategy of the doctor who, while pursuing a decision making tree that makes sense medically, leaves the patient uninformed as to the significance of the questions being asked.

I am referring here again to a cognitive process. The manifestations of the process, however, appear at the level of conversaton. Like the interpretive process that the Good's call for which was shown to prerequire interpretation at a conversational level, the problem of inadequate contextualization during medical diagnosis may be addressed at a conversational level as well. Because the doctor and patient do not provide each other with cues that would indicate whether understanding is taking place, they are unable to mediate the problem of the doctor's cryptic questioning strategy. The patient reveals her lack of understanding by reopening a topic that the doctor has closed. The doctor reveals his lack of understanding by making his several attempts to interpret the intent of a statement by the patient that is never made clear.

The rest of the interview maintains a similar level of non-cooperation. The interview is characterized by a predominance of talk by the doctor. (In this 10 minute interview, the patient speaks for a total of 78 seconds. Her longest utterance lasts five seconds). In a number of instances the doctor proceeds with a point he has begun to make even after the patient responds, suggesting again the low degree of use the doctor makes of information provided by the patient. This interview suggests that a lot of time and energy is wasted trying to obtain or convey information under non-cooperative conditions.

In contrast to this non-cooperative interview, Figure 5 is an opening segment of an interview that shows close cooperation.

-- Insert Figure 5 - Transcript #5 --

From the beginning there is a high degree of cooperation. Although this doctor's style is only one of many that produces indicators of conversational cooperation, he continually cues the patient that he has heard what she has said by repeating words or phrases that she uses (Saturday, line 8; bad? line 10; breathe as well, line 18; don't walk, line 21; careful, line 26). The doctor also makes a smooth transition from non-medical talk to medical

interviewing by structuring the first question about her chest (line 10) in the same way he phrased the inquiry into her financial outcome in Reno (line 8). Another indication that their cooperation is close is seen in the fact that interruptions do not disrupt the flow of information (the weighing interruption, lines 11-13; the overlapping utterance: I don't walk, line 20). Because of the high degree of cooperation, the doctor and patient both contribute information to a consideration of the significance of the patient's condition. In line 21, the doctor offers an assessment (if you try to walk you really huff and puff huh?). The patient changes the orientation to an evaluation (I'm really in trouble, line 23). The doctor begins to respond (line 24), but the patient goes on to change the orientation once again, to a consideration of the consequences of her condition. What follows is a brief lecture by the doctor that addresses the patient's concerns. It is oriented toward the the patient's statement that immediately preceeds it. This is in marked contrast to the solo interpretation effort made by the doctor in transcript #7, lines 19-24, in which he appears to be shooting in the dark (or perhaps firing buckshot) in an attempt to respond to the patient's concerns. In this interview, there is evidence that the information offerred by the doctor in lines 26-36 is received and understood by the patient: much later in the interview the patient uses the information in

another context in discussing the way her family feels about her activity level:

299 Pt: [4 sec] as it is they're trying to make out
300 like I can't (waddle)/ if you- you- sh- you
301 know I didn't misunderstand you that if-
302 even though I got in trouble walking and doing
303 a lot of things that I'm actually not
304 overtiring my heart and making all my
305 problems worse am I
306 Dr: [no/ no you're not/

The establishment of a high degree of conversational cooperation pervades the entire interview. The following example is illustrative:

-- Insert Figure 6 - Transcript #5 lines 134-154 --

The indices of cooperation present in this segment include 1) a repeated phrase which confirm that what is said has been heard (all the time? line 137); 2) overlapping talk that does not disrupt the flow of talk (lines 137-8, 139-40, 141-2, 143-4, 145-6); and 3) a picking up of a new phrase introduced by the other speaker (disk type thing, line 148;

disk like thing, line 151). Because of the high degree of cooperation, it takes only 28 seconds for the doctor to obtain infomation about a) frequency of pain (information elicited), b) status of the pain - getting worse (information offerred unelicited), c) the fact that x-rays were taken (elicited), that they were significant (offerred), and that they might show arthritic changes (elicited). In this short segment, the patient also receives information about the possible diagnosis of her condition and the pathophysiology of the arthritic process. In contrast to the information that is transferred (or fails to be transferred) in the first interview, all the information in this segment is pertinent to the topic that both participants have taken a part in developing.

The four interviews presented in this paper demonstrate the importance of conversational cooperation in a doctor-patient interview. Whether the 'task' in the interview segment was information gathering, planning a treatment regimen, assessing the patient's condition, or presenting medical knowledge, each task required that interpretation occur at a conversational level. In the first and third interviews, in which conversational cooperation was poor, inaccuracy, confusion, and information loss resulted. In the second and fourth interview, in which conversational cooperation was present to a high degree, interpretation

happened more easily. Most of the doctor-patient interviews reviewed for this study fall between these two extremes, yet the same principles apply to all interviews: Regardless of the task, regardless of the cognitive process, conversational mechanisms mediate the interaction between doctor and patient. The sociolinguistic evidence presented in this thesis suggests that conversational mechanisms mediate any clinical interaction. In order for Good's clinical imperative to be realized -- interpreting symptoms and reacting with appropriate therapeutic responses -- a physician must not only be capable of understanding different ways of perceiving the illness; he or she must first be capable of using conversational principles appropriately to facilitate a shared understanding of what is transpiring in the interview itself. Likewise, in order for information to be gathered effectively for medical diagnosis and for assessments of the patient's condition, the doctor and patient must establish an adequate degree of conversational cooperation.

IMPLICATIONS FOR PHYSICIAN TRAINING.

The analysis of transcripts as has been demonstrated here suggests that any lapse in conversational cooperation

has the potential for resulting in communication difficulties. But because interpretation at a conversational level usually happens intuitively and unconsciously, pratitioners must first become aware that conversational cooperation is a real phenomenon that can influence the outcome of an interview. The most effective teaching strategy might be to expose practitioners to videotapes and transcripts of successful and unsuccessful interviews and to have them evaluate the conversational strategies being used. A similar evaluation might then be applied to their own interactions with patients. While it might benefit some practitioners to receive specific recommendations, there is a danger that rules would be relied upon at the expense of an overall sensitivity. More important probably are general principles which, as an adjunct to working with videotapes, might be conveyed as follows: "Listen to what the patient is saying. Be less willing to assume you know what the patient means. If there is any doubt in your mind about what is implied by any given statement or question, ask for clarification. Likewise, in transferring information to a patient, be explicit, and be sure the patient is with you every step of the way."

DIRECTIONS FOR FUTURE RESEARCH.

Beyond the hypotheses developed in this paper, several issues remained unaddressed:

1) What is the relationship between information transfer within the interview and information retention after the interview?

2) What is the relationship between information transfer and eventual health status?

3) What additional constraints are placed on interviews in cross-cultural interactions? The data analyzed in this paper is limited to doctors and patients who share a communicative background. With a language or dialect difference added to the interaction, additional requirements are placed on the clinical encounter. Applying this type of analysis to cross-cultural interactions would require a comprehensive knowledge of the communicative culture of the group being studied. Some work of this type has been done in non-medical settings (Gumperz 1982a).

Sociolinguistic analysis is a promising methodological tool with which to study doctor-patient interactions. As a qualitative method that draws empirical data from the interaction itself, it has the flexibility and sensitivity to be applied to individual cases. A detailed understanding

of communication in medical encounters is an important step in promoting the delivery of humane and effective health care.

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FOOTNOTES.

[1] A more complete review of studies of doctor-patient communication appears in Inui and Carter 1985 and in West 1984.

[2] It should be noted that for discussion in this paper the assumption is being made that the doctor and patient wish to communicate as best they can and are striving to converse effectively. Success or failure in reaching a shared understanding in an interview therefore depends on the degree to which participants are ŧable' to cooperate conversationally, rather than on how willing they are to do so. Issues of power dynamics and information control may influence a doctor-patient interaction, but they are better addressed by other methods.

[3] Mishler (1984) examines discordant perceptions of the illness by describing the interaction between doctor and patient as parallel discourses (the "Voice of the Lifeworld" vs. the "Voice of Medicine") which may or may not meet. His contention that communication works better when the doctor is attentive to the Voice of the Lifeworld agrees with the findings in this thesis. What I have attempted to do here, however, is apply a more general theory of conversation to the data (e.g. conversation as a dynamic process of framing and reframing a perception of the situation). This enables me to treat problems of information transfer not as willful negligence, but as an inability of the participants to create the conditions necessary for information transfer to occur. Mishler's arguments are an integral component of the overall consideration of doctor-patient relationships. My analysis is more limited in scope, focussing on the intricacies of conversational cooperation.

APPENDIX: METHODOLOGY.

METHODOLOGY.

Several methodological issues became important in the development of this project. I will first discuss the problem of quantitative versus qualitative research and then describe the specific methodological challenges that I faced in collecting and analyzing the data.

Research in the medical field is mostly quantitative. Evaluators of medical journals reward quantitative rigor with top billing. Without question much of research in the field of medicine and health care delivery requires a quantitative approach. The classical "clinical trials" study design, involving randomly assigned treatment and control groups, is used effectively in testing the efficacy of therapeutic interventions. More complex quantitative studies apply multivariate analysis to diverse populations to permit the assessment of risk factors of disease. The strength of quantitative research lies in its reproducibility. If numbers can be assigned to variables and outcomes, the production of similar results can be verified with greater certainty.

Another characteristic of quantitative studies is in the definition of variables. Whether the research objective is exploratory, descriptive, or experimental, quantitative studies require that a basic assumption be made: that within the framework of the study, variables be finite and

categorizable (or controllable). Even in hypothesis generating studies, where a multitude of variables may be thrown into the statistical cuisinarte for analysis, the variables will have to have been defined initially. For this reason, quantitative methods falter in certain research environments. In some cases variables are so complex and require so much statistical manipulation that the reader of the results loses faith in the conclusions. This is the basis of much of the criticism of the mathematical models of macroeconomics, for example. In other cases the variables are non-reducible. They can be shown to influence the phenomenon under study, but lose their power of explanation when broken down or delineated. Fortunately, humans have the capacity to understand phenomena intuitively as well as reductionistically. Reviews of previous research lament the failure of coding schemes to characterize doctor-patient interaction (Inui and Carter 1985:535). As I reviewed various studies of verbal interaction, I realized that a qualitative approach to doctor-patient communication could capture the essence of the interaction with greater sensitivity than could a quantitative method. What qualitative research may lose in generalizability it gains in richness and accuracy for the specific cases under study.

The sociolinguistic analysis used in this paper is a qualitative method: it relies upon direct interpretation of non-reducible data. The data is the verbal and non-verbal

interaction represented in the form of a detailed transcription. Conclusions drawn from the data depend upon the ability of the investigator to perceive and interpret the data at many levels - from an overall impression of the pacing and flow of talk down through the content and context of the words and the organization of topics, and in through the intricacies of the paralinguistic cues of vocal inflection, pause length, and direction of gaze. Although interpretation may be based on the minutest of details within the transcript, the characteristic that distinguishes this type of research from quantitative analysis is that the data upon which the interpretation is based has not been represented or decontextualized; it remains in its original form, embedded in the environment from which it arose. (The case of transcription as a type of representation will be discussed below.) A piece of text may be highlighted to demonstrate a point, but the highlighted evidence remains a piece of raw data, a part of the whole.

What makes interpretation valid in a method like this? The question of validity of interpretation is important in any study, but it is particularly important to consider in a qualitative method such as this where the conclusions rely so heavily upon the interpretive perceptions of the investigator.

Tannen (1984:37-38) presents a wonderfully simple three part discussion of accountability in interpretation. The

first point reflects the benefits of non-represented data that I have just discussed: The interpretation offerred is one interpretation of many possible; it is not the only way of explaining what is going on. Since the data remains in its original form, it is open to alternative interpretation by the reader. The second point is that the interpretations do not arise out of thin air. They arise in the context of the whole conversation and in the larger context of the collection of conversations under study. Interpretations are lent strength by associated evidence. A factor that I demonstrate as having an important influence on a breakdown in communication is more valid if I show another example within the same interview or a pattern of similar examples appearing in several interviews. In this paper, I will always attempt to show patterns and repeated instances rather than isolated occurrences. Finally Tannen cites what she calls the "Aha factor" as an important qualification for accountability. She explains:

> If my interpretation is correct, then readers, on hearing my explication, will exclaim within their heads, "Aha!" Something they have intuitively sensed will have been made explicit... When the subject of analysis is human interaction -- a process that we all engage in, all our lives -- each reader can measure interpretation against her/his own experience. If an interpretation is misguided, no large number of readers will be deeply impressed by it; it will fade. If it is true, or has grasped a portion of the truth, it will be remembered (p. 38)

With this methodological encouragement, I will now describe the study design of this project.

The data is drawn from a collection of 215 doctor-patient interviews videotaped for the purpose of analyzing diagnosis and treatment of chronic lung disease (Gerbert and Hargreve, in press). The participants knew they were being videotaped, but studies showed that the presence of the camera and operator made little difference to the interview (Gerbert et al. 1982). The doctor and patient are both white with English as their first language. This makes communication problems arising in the interview more likely to be attributable to the doctor-patient interaction per se, rather than to an additional language barrier. The doctor in these interviews is a general practitioner who has seen the patient at least once before.

After viewing all of the interviews (some several times), ten were chosen to be analyzed in detail. The chosen interviews were selected to represent a wide range of communication effectiveness. The "good" interviews appeared on preliminary viewing to be smooth and easy to listen to. The participants seemed to engage one another closely: they listened and responded in a well-coordinated manner. In contrast, the "bad" interviews were uncomfortable to watch. The pacing was choppy and the participants often seemed to be struggling to understand one another. In some cases, it was apparent that one participant was missing some

information that the other was attempting to present. From the time of the initial viewing of the interviews I was pursuing a notion that there must be identifiable factors that determined how successful the communication would be.

Although only ten interviews were analyzed in depth, there is a plethora of information within them. And because this study aims to generate hypotheses rather than test them, a detailed consideration of a small number of cases is warranted. One function that qualitative research can serve is in generating information for the development of scales and other more objective measures of interaction that can be applied to larger data sets. From a preliminary study such as this, hypotheses may be developed and later be tested and refined by the addition of more data. Other methodological tools may be applied. This study is the first step, however, aiming at comprehensive qualitative description of a few representative interactions.

Once the interviews had been selected, the next step was to transcribe them. Upon first consideration, transcription seems a straightforward task. The transcription style, however, may determine to a certain degree the information that is available for analysis. Although some information is inevitably lost in translating from a taped interaction to a written text (one could even argue that the process of videotaping involves a degree of selection bias), an effort is made to capture as much

information as possible. In this paper I use a transcription style similar to that of Gumperz (1982b) and of Tannen (1984). In addition to a verbatim translation of words and sounds, this transcription style also records the timing of utterances in relation to each other. With this information, overlapping talk and interruption patterns can be included in the data. Non-verbal, or paralinguistic cues that are noted include the length of pauses within and between utterances, marked shifts in vocal volume and pitch, and the lengthening of vowel sounds within individual words. Some styles attempt a more phonetic translation of speech, but these transcripts are very difficult to read, especially for the uninitiated. There is a trade-off between including a lot of information and thus leaving less room for interpretation when the reader translates back to the sound of the interaction in his or her head, and interfering with the intuitive process of hearing while reading by forcing the reader to wade through the often odd appearance of a more phonetically transcribed text. As unused props on a stage can distract an audience from the action of the play, so can unused transcription notations in a text detract from the clarity of the reading. A more comprehensive discussion of transcription styles appears in Mishler's The Discourse of Medicine (1984, ch.2) and in Gumperz's Discourse Strategies.

The analytical procedure for this project developed as the study progressed. Not strictly a data-driven process, I found myself working back and forth between the data itself and the hypotheses that I was developing. I began by identifying segments which seemed to be problematic, working initially from an intuitive level as I did in selecting interviews for analysis. The next step was to compare these "problem" segments to other problem segments and to segments in which the communication seemed to be working smoothly. I tried to identify factors in the text that were responsible for the apparent communication problems, but I had not as yet clearly defined what the "problem" was. As I reviewed more interviews for problem segments, I began to see a pattern emerging. I realized that the segments I was choosing had the common feature of some information being lost or confused in the course of the conversation. At this point I decided to make an official methodological decision. I made "information transfer" an outcome measure, a standard by which I could judge the success of the interchange. I defined information transfer as new information being introduced by one participant and being received and worked with in some way by the other participant. With this definition in mind, I had an operational concept with which to view other data. There are three main advantages to choosing information transfer as an outcome measure. First, the transfer of information may be considered a primary goal

of all doctor-patient interactions. Whether the particular "task" of the interview is taking a medical history, discussing therapeutic options, or requesting advice about a specific complaint, information must be transferred from doctor to patient and/or from patient to doctor in each case. The second advantage is that information transfer is a process that can be reliably identified and analyzed using sociolinguistic techniques. Finally, using an outcome measure that lies within the data means that the outcome, like the data itself, remains unabstracted, in its original form, and available for verification by the reader.

The last step in the analysis involved the refining of hypotheses. In this step, I took early data as well as new data, and analyzed it in the context of hypotheses being developed. By recycling evidence as one's knowledge becomes more sophisticated, hypotheses may be checked for consistency against an increasing body of data. Contradictory data is analyzed as well in the context of the developing hypotheses. Much of the basic research in conversational analysis proceeds in the following way: Examples are offerred to illustrate a principle; new or contradictory data is then introduced as a foil to the developing hypotheses; hypotheses are refined by considering more carefully how either the new data differs from the other examples or how recondsidering earlier definitions can explain an apparent contradiction (e.g. Levinson 1983;

Pomeranz 1984; Button and Casey 1984). This procedure is particularly appropriate for a qualitative study in which the variables are initially unknown.

Figures:

Figure 1.

Figure 1. Transcript #8 MARSHALL

161 Dr: [4 sec] let's get back to the- the- cough business u:h
162 it's all gone now but over the last few months have you
163 had a- you know a persisting cough?
164 Pt: oh it was horrible yeah I had to prop myself up I
165 Dr: [u:m
166 Pt: couldn't lay down flat at all
167 Dr:]uh-huh does- does the not
168 being able to lie down flat was because what/ what
169 happened
170 Pt:]as soon as I'd lay down I'd start coughing/
171 and even sittin' in the chair it got to the point uh
172 the husband'd get mad and say WHAT ARE YOU HACKING like
173 that for I s' can't help it/
174 Dr: okay do you actually get to sleep- wake up out of a
175 sound sleep in the middle of the night coughing? or is
176 it a matter of you just can't lie flat/
177 Pt: oh/ n- for a long time I couldn't hardly get to sleep/
178 I just- the cough would just keep me awake I'd- doze
179 off and sit up and doze off and slide up more on a
180 pillow/
181 Dr: so did you find yourself actually waking out
182 of a sound sleep
183 Pt: [oh yeah uh-huh
184 Dr:]uh-huh/ uh and did what you just sort
185 of sat up/
186 Pt: I'd sit- sit up

187 Dr:]was there any other symptom at that
188 point/
189 Pt: no:?
190 Dr: [you were just coughing
191 Pt:]yeah
192 Dr: you didn't have pain?
193 Pt: no just- just the breathing it just seemed like I-
194 Dr: [was there
195 any sense of pressure anywhere?
196 Pt: yeah up in here/ [indicates chest with her hand]
197 Dr: alright/ so you- you sort of had a uh- a pressure
198 anything else that you noticed/ or do you remember/
199 Pt: I can't remember now
200 Dr:]and the last time that you did that
201 was when/ that you woke up out of a sound sleep with
202 pressure and trouble breathing/
203 Pt: oh I'd say about two and a half weeks ago/ since the
204 Dr: [right
205 Pt: cough left I haven't had that real heavy heavy
206 pressure/
207 Dr: was that a night time every- every night kind
208 of thing? or was it every so often/
209 Pt: [oh yeah every night/
210 Dr: and now that has gone away miraculously as the cough
211 disappeared
212 Pt:]um yeah/

Figure 3.

Figure 3. Transcript #6 MARSHALL

156 Dr: do you relate your um...wheezing at all to physical
157 exertion?
158 Pt: yeah sure/
159 Dr: what happens/
160 Pt: [3 sec] well..I wheeze/
161 Dr: [3.5 sec] do you um ever use the inhaler before
162 exercising?
163 Pt: [2.5 sec] no I'm not generally attuned enough to do
164 that though I suppose that would be a good idea to do
165 that when I-
166 Dr: does swimming cause the uh wheezing?
167 Pt: any exercise can uh bring on wheezing/ any real
168 exertion/
169 Dr: well it's a thought because you see if you were- you're
170 using your inhaler very infrequently/
171 Pt: right/
172 Dr: and um...since your asthma is seemingly at least in
173 part physically connected/ [3 sec] if you were to
174 inhale two sprays-
175 Pt: before I did some excercise-
176 Dr: [properly before exercising/ you could
177 probably exercise much more-
178 Pt: right/
179 Dr: and therefore develop a better level of fitness
180 Pt: [mmm-hmm/
181 okay/ yes I'm listening carefully/

182 Dr: and then through improved cardiovascular fitness-

183 Pt: exercise more/ right

184 Dr: [then you'll find that you could exercise

185 more without getting as short of breath/

186 Pt: right/

187 Dr: [3 sec] well- you want to sit up here for a minute?

Figure 4.

Figure 4 - TRANSCRIPT #7 MARSHALL

Pt: my potassium's low huh/

Dr: yeah it was uh and we can do that to- today too/ you- I put you on Moduretic before did I not?

Pt: mmm-hmm/

Dr: okay and you're taking one a day on- on the

Pt: [mmm-hmm

Dr: (Moduretic)/ uh your potassium is still 3.3 and I would imagine that that's still low because of before and let's put- I'll plan on supplementing you with potassium for about another two weeks and then we'll and then we'll drop it off/ do you have any of the Slo-K left?

Pt: yeah/

Dr: good/ how many do you have?

Pt: I don't know/ I've got- I've got refills on it/

Dr: okay/ okay/ let me just check your blood pressure today/ [5 sec]

Pt: so should I take Slo-K (once a day?)

Dr: u:h yeah/ yeah/ I think the 3.3 is a little bit low u:h with 3.5 and 5 is about the- is about the normal level 3.3 will never bother you but you might feel a little bit better you might have some uh I would imagine that it would go up slowly over the next uh uh...six months or so with your being on the Moduretic/

Pt: mmm-hmm/

Figure 5.

Figure 5 - TRANSCRIPT #5 MARSHALL

1 Dr: how are you today/
2 Pt: fine thank you/
3 Dr: good what's been happening since the last time I saw
4 you anything special?
5 Pt: no/ I went to Reno/
6 Dr: did you? when did you do that/
7 Pt: Saturday/
8 Dr: Saturday/ how was the trip financially/
9 Pt: bad/
10 Dr: bad? and how was it as far as your chest is concerned/
11 a hundred and twenty/[her weight]
12 Pt: 'bout right/
13 Dr: yes that's you/
14 Pt: u:m [2 sec] well..you're right..I don't breath as well
15 up there
16 Dr: no?
17 Pt: [fairly short of air/
18 Dr: well you breathe as well but you don't get as 'enough-
19 you don't get as much oxygen in that's the difference/
20 Pt: [I don't walk
21 Dr: you don't walk/ if you try to walk you really huff and
22 puff huh?
23 Pt: [I'm really in trouble
24 Dr: right well-
25 Pt: I have to really be careful/

Dr: yeah well uh you know as long as you're careful I mean when you exercise around here..you know that is when you're active and you get short of breath you don't hurt yourself when you get short of breath you see I mean that's not hurting you any/ it's just that you're at the limit of your activity level/ so you know that it's time to slow down a little or rest to catch your breath and then you get active again so it's not that

Pt: [mmm-hmm

Dr: you have hurt yourself in any way just because you get short of breath with activity/ now the problem up there is that if you get short of breath because of the altitude then even resting doesn't necessarily make you feel better/

Pt: that's right I take my oxygen

Figure 6.

Figure 6 - TRANSCRIPT #5 lines 134-154 MARSHALL

134 Dr: sometimes the muscle that is bothersome/ how much of
135 the time does it bother you/
136 Pt: all the time/
137 Dr: all the time? does it-
138 Pt: [and it's getting worse/ it- it's
139 really quite sore-
140 Dr: [is that right? did you take any x-rays of
141 the joint?
142 Pt: [and he took some x-rays and he said it does show
143 something over there
144 Dr: [uh-huh what does it show/
145 Pt: oh oh that's what he said to me I don't know?
146 Dr: [some arthritis?
147 Pt: he said it could be arthritis but then he explained it
148 like maybe uh a disc type thing
149 Dr: [well uh uh uh uh it's
150 Pt: [and uh
151 Dr: not really a disc like thing 'cause it's different
152 there's cartilage there and the cartilage gets worn
153 down but that's part of the arthritic process to some
154 extent..

Figure 7.

Figure 7 - KEY TO NOTATIONS USED IN TRANSCRIPTS.

/ Falling tone, as at the end of a sentence.

e.g. 1) well good that's the point/

2) how are you today/

? Rising tone, as in a question.

e.g. 1) did you get the test done?

.. 1 second pause.

... 1.5 second pause.

^ Marked upward shift in pitch.

e.g. ¢good (chuckle)

: Extended vowel sound.

e.g. so that a:s you work along you: find what/

() Parentheses surround words that could not be heard clearly on the tape.

Overlap. Simultaneous talk.

e.g. Pt: mmm I don't know maybe yeah sometimes if
Dr: have you ever
quit smoking since you were fourteen?

Latching. No pause at all between utterances.

e.g. Pt: and I want to get some more pills
(before I leave)
Dr: alright/

CAPS Indicate a marked increase in volume.