Interactive Frames and Knowledge Schemas in Interaction: Examples from a Medical Examination/Interview

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Earlier work suggested that "frame," "schema" and related terms could be understood as "structures of expectation." Suggesting now that there are two distinct types of structures of expectation to which such terms have been applied, we use "frames" to refer to the anthropological/sociological notion of interactive frames of interpretation, and "schema" to refer to the cognitive psychological/artificial intelligence notion of knowledge schemas. Drawing on and expanding earlier analysis of talk in a pediatric interaction, we show how frames and schemas interact. Balancing and shifting examination, consultation and management frames accounts for the burden on the pediatrician who examines a child in the mother's presence. Mismatches in the pediatrician's and mother's schemas for health and cerebral palsy account for the mother's discomfort and recalcitrant concerns, and consequently for her frequent questions which trigger the frame switches.

INTRODUCTION

Goffman (1981a) introduces the term "footing" as "another way of talking about a change in our frame for events," "a change in the alignment we take up to ourselves and the others present as expressed in the way we manage the production or reception of an utterance" (p. 128). He describes the ability to shift footing within an interaction as "the capacity of a dexterous speaker to jump back and forth, keeping different circles in play" (p. 156). Goffman asserts that "linguistics provides us with the cues and markers through which such footings become manifest, helping us to find our

way to a structural basis for analyzing them" (p. 157). Using linguistic "cues and markers" as a "structural basis for analyzing" talk in a pediatric interaction, we show that a mismatch of knowledge schemas can trigger frame switches which constitute a significant burden on the pediatrician when she conducts her examination of a child in the mother's presence. Combining the perspectives of a social psychologist (Wallat) and a linguist (Tannen), we thus examine the specifics of talk in interaction in a particular setting (what Schegloff [this volume] calls "idiosyncratic, particularized to some here-and-now interactions") to provide a basis for understanding talk in terms of shifting frames.

Like many of our colleagues, we make use of videotape to analyze interaction which is evanescent in nature. In his description of the theoretical and methodological complexity of making informed use of filmed records in social psychological research, Kendon (1979) cautions that microanalytic analysis must be based on a theoretical perspective involving "context analysis." He sees context analysis as a conceptual framework which presumes that participants are not isolated senders and receivers of messages. When people are in each other's presence, all their verbal and nonverbal behaviors are potential sources of communication, and their actions and meanings can be understood only in relation to the immediate context, including what preceded and may follow it. Thus, interaction can be understood only in context: a specific context. We have chosen the pediatric setting as an exemplary context of interaction. Understanding how communication works in this context provides a model which can be applied in other contexts as well.

In examining talk in a pediatric setting, we are interested in the duality of what emerges in interaction: the stability of what occurs as a consequence of the social context, and the variability of particular interactions which results from the emergent nature of discourse. On one hand, meanings emerge which are not given in advance; on the other, meanings which are shaped by the doctor's or patient's prior assumptions (as we will argue, their knowledge schemas) may be resistant to change by the interlocutor's talk.

As Cicourel (1975) cautioned over a decade ago, when social scientists create a data base for addressing the issues involved in integrating structure and process in the study of participants in medical settings, their textual material should "reflect the complexities of the different modalities and emergent contextual knowledge inherent in social interaction" (p. 34). One important way that Cicourel, and after him Richard Frankel (forthcoming), sought to observe such complexities has been to compare discourse produced in spoken and written modalities. We have adopted this practice and have also developed a method of analyzing videotapes of participants in more than one setting.

Our analysis is based on videotapes of interaction involving a cerebral palsied child, her family, and a group of health care professionals at a university medical facility. (More detailed background to the study is provided below). We began by focusing on the pediatric examination/interview. In preliminary analysis, we applied the notion of frames (Tannen and Wallat, 1982; 1983). Comparing interaction involving different combinations from the same pool of participants in five different settings, as well as spoken and written modalities, we investigated the negotiation, elaboration and condensation of information (Tannen and Wallat, 1986) and confronted issues of family involvement in medical practice (Tannen and Wallat, forthcoming). In this paper we develop and expand our discussion of frames; briefly recap our earlier analysis of frames in the pediatric interview/examination; and then further develop and illustrate their operation by reference to new examples. We then develop and expand our notion of knowledge schemas, using new examples as well as further analysis of an example presented for other purposes in an earlier study (Tannen and Wallat, 1986). Based on our refinement of the terms frames and schemas, we show how the two interact and affect communication. Finally, we consider the implications of our study both for medical practice and for analysis of human interaction.

FRAMES AND SCHEMAS

The term frame, and related terms such as script, schema, prototype, speech activity, template and module, have been variously used in linguistics, artificial intelligence, anthropology and psychology. Tannen (1979) reviews this literature and suggests that all these concepts reflect the notion of structures of expectation. Yet that early treatment of a variety of concepts of frames and schemas in the disciplines of linguistics, cognitive psychology and artificial intelligence said little about the type of frames that Goffman (1974) so exhaustively analyzed, as he himself observed (Goffman, 1981b). The present paper broadens the discussion of frames to encompass and integrate the anthropological/sociological sense of the term.

The various uses of frame and related terms fall into two categories. One is interactive "frames of interpretation" which characterize the work of anthropologists and sociologists. We refer to these as frames, following Bateson (1972), who introduced the term, as well as most of those who have built on his work, including scholars in the fields of anthropology (Frake, 1977), sociology (Goffman, 1974) and linguistic anthropology (Gumperz, 1982; Hymes, 1974). The other category is knowledge structures, which we refer to as schemas, but which have been variously labeled in work in artificial intelligence (Minsky, 1975; Schank and Abelson, 1977), cognitive psychology (Rumelhart, 1975), and linguistic semantics (Chafe, 1977; Fillmore, 1975; 1976).

INTERACTIVE FRAMES

The interactive notion of frame refers to a definition of what is going on in interaction, without which no utterance (or movement or gesture) could be interpreted. To use Bateson's classic example, a monkey needs to know whether a push from another monkey is intended within the frame of play or the frame of fighting. People are continually confronted with the same interpretive task. In order to comprehend any utterance, a listener (and a speaker) must know within which frame it is intended: for example, is this joking? Is it fighting? Something intended as a joke but interpreted as an insult (it could of course be both) can trigger a fight.

Goffman (1974) sketched the theoretical foundations of frame analysis in the work of William James, Alfred Schutz and Harold Garfinkel to investigate the socially constructed nature of reality. Building on their work, as well as that of linguistic philosophers John Austin and Ludwig Wittgenstein, Goffman developed a

complex system of terms and concepts to illustrate how people use multiple frameworks to make sense of events even as they construct those events. Exploring in more detail the linguistic basis of such frameworks, Goffman (1981a) introduced the term footing to describe how, at the same time that participants frame events, they negotiate the interpersonal relationships, or "alignments," that constitute those events.

The interactive notion of frame, then, refers to a sense of what activity is being engaged in, how speakers mean what they say. As Ortega y Gasset (1959, p. 3), a student of Heidegger, puts it, "Before understanding any concrete statement, it is necessary to perceive clearly 'what it is all about' in this statement and 'what game is being played,' "[1] Since this sense is gleaned from the way participants behave in interaction, frames emerge in and are constituted by verbal and nonverbal interaction.

KNOWLEDGE SCHEMAS

We use the term knowledge schema to refer to participants' expectations about people, objects, events and settings in the world, as distinguished from alignments being negotiated in a particular interaction. Linguistic semanticists have been interested in this phenomenon, as they have observed that even the literal meaning of an utterance can be understood only by reference to a pattern of prior knowledge. This is fundamental to the writing of Heidegger (for example 1962, p. 199), as in his often quoted argument (p. 196) that the word "hammer" can have no meaning to someone who has never seen a hammer used. To borrow an example from Fillmore (1976), the difference between the phrases "on land" and "on the ground" can be understood only by reference to an expected sequence of actions associated with travel on water and in the air, respectively. Moreover, the only way anyone can understand any discourse is by filling in unstated information which is known from prior experience in the world. This became clear to researchers in artificial intelligence as soon as they tried to get computers to understand even the simplest discourse—hence, for example, the need for Schank and Abelson's (1977) restaurant script to account for the use of the definite article "the" in a minimal discourse such as, "John went into a restaurant; he asked the waitress for a menu."

Researchers in the area of medical sociology

and anthropology such as Kleinman (1980) and Mishler (1984) have observed the problem of doctors' and patients' divergent knowledge schemas, although they may not have used this terminology. Cicourel (1983), for example, describes the effects of differing "structures of belief" in a gynecological case. The contribution of our analysis is to show the distinction and interaction between knowledge schemas and interactive frames.

At an earlier stage of this study, we referred to the interactive notion of frame as "dynamic" and the knowledge structure notion of schema as "static," but we now realize that all types of structures of expectations are dynamic, as Bartlett (1932), whose work underlies much of present day schema theory, pointed out, and as others (for example, Frake, 1977) have emphasized. That is, expectations about objects, people, settings, ways to interact and anything else in the world are continually checked against experience and revised.

The Interaction of Frames and Schemas

We demonstrate here a particular relationship between interactive frames and knowledge schemas by which a mismatch in schemas triggers a shifting of frames. Before proceeding to demonstrate this by reference to detailed analysis of pediatric interaction, we will illustrate briefly with reference to an example of a trivial, fleeting and mundane interchange that was part of a telephone conversation.

One author (Tannen) was talking to a friend on the telephone, when he suddenly yelled, "YOU STOP THAT!" She knew from the way he uttered this command that it was addressed to a dog and not her. She remarked on the fact that when he addressed the dog, he spoke in something approximating a southern accent. The friend explained that this was because the dog had learned to respond to commands in that accent, and, to give another example, he illustrated the way he plays with the dog: "I say, 'GO GIT THAT BALL!' " Hearing this, the dog began running about the room looking for something to fetch. The dog recognized the frame "play" in the tone of the command; he could not, however, understand the words that identified an outer frame, "*referring* to playing with the dog," and mistook the reference for a literal invitation to play.

This example illustrates, as well, that people (and dogs) identify frames in interaction by association with linguistic and paralinguistic cues—the way words are uttered—in addition to what they say. That is, the way the speaker uttered "you stop that!" was associated with the frame "disciplining a pet" rather than "chatting with a friend." Tannen drew on her familiarity

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[1] Thanks to A.L. Becker for calling our attention to Ortega y Gasset. For a discussion of framing based on numerous examples from everyday life, see Chapter 5, "Framing and Reframing," in Tannen (1986).

with the use of linguistic cues to signal frames
when she identified her friend's interjection
"You stop that!" as addressed to a dog, not her.
But she also drew on the knowledge that her
friend was taking care of someone's dog. This
was part of her knowledge schema about her
friend. Had her schema included the information
that he had a small child and was allergic to
dogs, she might have interpreted the same
linguistic cues as signalling the related frame,
"disciplining a misbehaving child." Further-
more, her expectations about how any speaker
might express orders or emotions, i.e., frame
such expressions, were brought to bear in this
instance in conjunction with her expectations
about how this particular friend is likely to
speak to her, to a dog and to a child; that is, a
schema for this friend's personal style. Thus
frames and schemas interacted in her compre-
hension of the specific utterance.

The remainder of this paper illustrates frames
and schemas in a videotaped interaction in a
medical setting: the examination of a child by a
pediatrician in the presence of the mother. It
demonstrates that an understanding of interac-
tive frames accounts for conflicting demands on
the pediatrician. In addition to communicative
demands arising from multiple interactive frames,
much of the talk in the pediatric encounter can
be understood as resulting from differing
knowledge schemas of the mother and the
pediatrician. This will be illustrated with
reference to their schemas for health and
cerebral palsy. Finally, it is the mismatch in
knowledge structure schemas that prompts the
mother to ask questions which require the doctor
to switch frames.

BACKGROUND OF THE STUDY

The videotapes on which our analysis is based
were obtained from the Child Development
Center of the Georgetown University Medical
School, following our presentation of a proposal
to the Center's Interdisciplinary Research Com-
mittee. The videotapes had been made as raw
material for a demonstration tape giving an
overview of the Center's services, and therefore
documented all the encounters involving a
single family and Center staff, which took place
over three weeks.

The primary goal of the Center is to provide
interdisciplinary training to future professionals
in serving developmentally disabled children
and their families. Staff members work in
interdisciplinary teams which include an audiol-
ogist, speech pathologist, pediatrician, social
worker, nutritionist, dentist, nurses and an
occupational, educational and physical thera-
pist. Each professional meets with the child and,
in some cases, other family members; then all

meet to pool the results of their evaluations,
which are presented to the parents in a group
meeting.

The parents of Jody, the eight-year-old
cerebral palsied child in this study, were
referred to the Center by the parents of another
child. Their chief concern was Jody's public
school placement in a class for mentally retarded
children. Their objective, which was met, was
to have a Center representative meet with the
supervisor of special education in their district
and have Jody placed in a class for the
orthopedically rather than mentally handi-
capped.

In addition to the spastic cerebral palsy
(paralysis resulting from damage to the brain
before or during birth), Jody was diagnosed as
having a seizure disorder; a potentially lethal
arteriovenous malformation in her brain (this
was subsequently, and happily, rediagnosed as a
less dangerous malformation involving veins
only, rather than both arteries and veins; facial
hemangiomas (red spots composed of blood-
filled capillaries); and slight scoliosis (curvature
of the spine).

We began our analysis by focusing on the
pediatrician's examination/interview, which took
place with the mother present. As part of our
analysis, we met, separately, with the doctor
and the mother, first talking with them and then
reviewing segments of the tape. The mother
expressed the opinion that this doctor "was
great," in explicit contrast with others who "cut
you off and make you feel stupid" and deliver
devastating information (for example, "she'd be
a vegetable") in an offhand manner.

INTERACTIVE FRAMES IN A
PEDIATRIC EXAMINATION

The goal of this paper, as announced at the
outset, is to show that examining Jody in her
mother's presence constituted a significant
burden on the pediatrician, which can be
attributed to a conflict in framing resulting from
mismatched schemas. To demonstrate this
interaction between frames and schemas, we
will first show what framing is and how it
works, beginning with the crucial linguistic
component of register.

Linguistic Registers

A key element in framing is the use of
identifiable linguistic registers. Register, as
Ferguson (1985) defines it, is simply "variation
conditioned by use": conventionalized lexical,
syntactic and prosodic choices deemed appropri-
ate for the setting and audience. Early analysis
of the videotape of the pediatrician examining
Jody indicated that the pediatrician used three

distinct registers in addressing each of three audiences (Tannen and Wallat, 1982). We will briefly recap the findings of that study.

In addressing the child, the pediatrician uses "motherese": a teasing register characterized by exaggerated shifts in pitch, marked prosody (long pauses followed by bursts of vocaliza-tion), and drawn out vowel sounds, accompa-nied by smiling. For example, while examining Jody's ears with an ophthalmoscope (ear light), the pediatrician pretends to be looking for various creatures, and Jody responds with delighted laughter: (See Appendix for transcrip-tion conventions.)

Doctor: Let me look in your ear. Do you have a monkey in your ear?
Child: [laughing] No::::.
Doctor: No:::? . . . Let's see. . . . I .. see . . . . . . a birdie!
Child: [[laughing] No:::.
Doctor: [[smiling] No.

In stark contrast to this intonationally exagger-ated register, the pediatrician uses a markedly flat intonation to give a running account of the findings of her examination, addressed to no present party, but designed for the benefit of pediatric residents who might later view the videotape in the teaching facility. We call this "reporting register." For example, looking in Jody's throat, the doctor says, with only slight stumbling:

Doctor: Her canals are- are fine, they're open, um her
          tympanic membrane was thin, and light,

Finally, in addressing the mother, the pediatri-cian uses conventional conversational register, as for example:

Doctor: As you know, the important thing is that she does have
          difficulty with the use of her muscles.

Register-Shifting

Throughout the examination the doctor moves among these registers. Sometimes she shifts from one to another in very short spaces of time, as in the following example in which she moves smoothly from teasing the child while examin-ing her throat, to reporting her findings, to explaining to the mother what she is looking for and how this relates to the mother's expressed concern with the child's breathing at night.

[Teasing register]

Doctor: Let's see. Can you open up like this, Jody. Look.
          [Doctor opens her own mouth]
Child: Aaaaaaaaaaaaaah.
Doctor: [Good. That's good.
Child: [Aaaaaaaaaaah.

[Reporting register]

Doctor: /Seeing/ for the palate, she has a high arched palate
Child: [Aaaaaaaaaaaaaaaaaaaaaaaaaah
Doctor: but there's no cleft,
          [maneuvers to grasp child's jaw]

[Conversational register]

          . . . what we'd want to look for is to see how she . . .
          mmoves her palate. . . . Which may be some of the
          difficulty with breathing that we're talking about.

The pediatrician's shifts from one register to another are sometimes abrupt (for example, when she turns to the child and begins teasing) and sometimes gradual (for example, her reporting register in "high arched palate" begins to fade into conversational register with "but there's no cleft," and comes to rest firmly in conversational register with "what we'd want to look for . . . "). In the following example, she shifts from entertaining Jody to reporting findings and back to managing Jody in a teasing tone:

[Teasing register]

Doctor: That's my light.
Child: /This goes up there./
Doctor: It goes up there. That's right.

[Reporting register]

> Now while we're examining her head we're feeling for
> lymph nodes in her neck . . . or for any masses . . .
> okay . . . also you palpate the midline for thyroid,
> for goiter . . . if there's any.

[Teasing register]

> Now let us look in your mouth. Okay? With my light.
> Can you open up real big? . . . Oh, bigger. . . . Oh
> bigger . . . Bigger.

Frame-Shifting

Although register shifting is one way of accomplishing frame shifts, it is not the only way. Frames are more complex than register. Whereas each audience is associated with an identifiable register, the pediatrician shifts footings with each audience. In other words, she not only talks differently to the mother, the child and the future video audience, but she also deals with each of these audiences in different ways, depending upon the frame in which she is operating.

The three most important frames in this interaction are the social encounter; examination of the child and a related outer frame of its videotaping; and consultation with the mother. Each of the three frames entails addressing each of the three audiences in different ways. For example, the social encounter requires that the doctor entertain the child, establish rapport with the mother and ignore the video camera and crew. The examination frame requires that she ignore the mother, make sure the video crew is ready and then ignore them, examine the child, and explain what she is doing for the future

video audience of pediatric residents. The consultation frame requires that she talk to the mother and ignore the crew and the child—or, rather, keep the child "on hold," to use Goffman's term, while she answers the mother's questions. These frames are balanced nonverbally as well as verbally. Thus the pediatrician keeps one arm outstretched to rest her hand on the child while she turns away to talk to the mother, palpably keeping the child "on hold."

Juggling Frames

Often these frames must be served simultaneously, such as when the pediatrician entertains the child and examines her at the same time, as seen in the example where she looks in her ear and teases Jody that she is looking for a monkey. The pediatrician's reporting register reveals what she was actually looking at (Jody's ear canals and tympanic membrane). But balancing frames is an extra cognitive burden, as seen when the doctor accidentally mixes the vocabulary of her diagnostic report into her teasing while examining Jody's stomach:

[Teasing register]

Doctor: Okay. All right. Now let me /?/ let me see what I
           can find in there. Is there peanut butter and jelly?
           Wait a minute.⌐
Child: ⌐No⌐
Doctor: ⌐No peanut butter and jelly in there?
Child: No.

[Conversational register]

Doctor: Bend your legs up a little bit. . . . That's right.

[Teasing register]

           Okay? Okay. Any peanut butter and jelly in here?⌐
Child: ⌐No⌐
Doctor: ⌐No.
           No. There's nothing in there. Is your spleen
           palpable over there?⌐
Child: ⌐No.

The pediatrician says the last line, "Is your spleen palpable over there?" in the same teasing register she was using for peanut butter and jelly, and Jody responds with the same delighted giggling "No" with which she responded to the teasing questions about peanut butter and jelly. The power of the paralinguistic cues with which the doctor signals the frame "teasing" is greater than that of the words spoken, which in this case leak out of the examination frame into the teasing register.

In other words, for the pediatrician, each interactive frame, that is, each identifiable activity that she is engaged in within the interaction, entails her establishing a distinct footing with respect to the other participants.

The Interactive Production of Frames

Our analysis focuses on the pediatrician's speech because our goal is to show that the mismatch of schemas triggers the frame switches which make this interaction burdensome for her. Similar analyses could be performed for any participant in any interaction. Furthermore, all participants in any interaction collaborate in the negotiation of all frames operative within that interaction. Thus, the mother and child collaborate in the negotiation of frames which are seen in the pediatrician's speech and behavior.

For example, consider the examination frame as evidence in the pediatrician's running report of her procedures and findings for the benefit of the video audience. Although the mother interrupts with questions at many points in the examination, she does not do so when the pediatrician is reporting her findings in what we have called reporting register.[2] Her silence contributes to the maintenance of this frame. Furthermore, on the three of seventeen occasions of reporting register when the mother does offer a contribution, she does so in keeping with the physician's style: Her utterances have a comparable clipped style.

The Homonymy of Behaviors

Activities which appear the same on the surface can have very different meanings and consequences for the participants if they are understood as associated with different frames. For example, the pediatrician examines various parts of the child's body in accordance with what she describes at the start as a "standard pediatric evaluation." At times she asks the mother for information relevant to the child's condition, still adhering to the sequence of foci of attention prescribed by the pediatric evaluation. At one point, the mother asks about a skin condition behind the child's right ear, causing the doctor to examine that part of Jody's body. What on the surface appears to be the same activity—examining the child—is really very different. In the first case the doctor is adhering to a preset sequence of procedures in the examination, and in the second she is interrupting that sequence to focus on something else, following which she will have to recover her place in the standard sequence.

Conflicting Frames

Each frame entails ways of behaving that potentially conflict with the demands of other frames. For example, consulting with the mother entails not only interrupting the examination sequence but also taking extra time to answer her questions, and this means that the child will get more restless and more difficult to manage as the examination proceeds. Reporting findings to the video audience may upset the mother, necessitating more explanation in the consultation frame. Perhaps that is the reason the pediatrician frequently explains to the mother what she is doing and finding and why.

Another example will illustrate that the demands associated with the consultation frame can conflict with those of the examination frame, and that these frames and associated demands are seen in linguistic evidence, in this case by contrasting the pediatrician's discourse to the mother in the examination setting with her report to the staff of the Child Development Center about the same problem. Having recently learned that Jody has an arteriovenous malformation in her brain, the mother asks the doctor during the examination how dangerous this condition is. The doctor responds in a way that balances the demands of several frames:

Mother: I often worry about the danger involved too.→
                 Doctor: ∟Yes.
cause she's well I mean like right now,
. . . uh . . . in her present condition.→
                 Doctor: ∟mhm

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[2] The notion of "reporting register" accounts for a similar phenomenon described by Cicourel (1975) in an analysis of a medical interview.

Mother: I've often wondered about how dangerous
they they are to her right now.
Doctor: We:ll . . . um . . . the only danger would be from bleeding.
. . . Fróm them. If there was any rupture, or anything
like that. Which CAN happen. . . . um . . . that would
be the dange⌐r.
     Mother: ⌊mhm
Doctor: . . . Fór that. But they're . . . . . . mm . . . nót
going to be something that will get worse
as time goes on.
Mother: Oh I see.
Doctor: But they're just thére. Okay?

The mother's question invoked the consultation frame, requiring the doctor to give the mother the information requested based on her medical knowledge, plus take into account the effect on the mother of the information that the child's life is in danger. However, the considerable time that would normally be required for such a task is limited because of the conflicting demands of the examination frame: the child is "on hold" for the exam to proceed. (Notice that it is the admirable sensitivity of this doctor that makes her aware of the needs of both frames. According to this mother, many doctors have informed her in matter-of-fact tones of potentially devastating information about her child's condition, without showing any sign of awareness that such information will have emotional impact on the parent. In our terms, such doctors acknowledge only one frame—examination—in order to avoid the demands of conflicting frames—consultation and social encounter. Observing the burden on this pediatrician, who successfully balances the demands of multiple frames, makes it easy to understand why others might avoid this).

The pediatrician blunts the effect of the information she imparts by using circumlocutions and repetitions; pausing and hesitating; and minimizing the significant danger of the arteriovenous malformation by using the word "only" ("only danger"), by using the conditional tense ("that would be the danger"), and by stressing what sounds positive, that they're not going to get worse. She further creates a reassuring effect by smiling, nodding and using a soothing tone of voice. In reviewing the videotape with us several years after the taping, the pediatrician was surprised to see that she had expressed the prognosis in this way, and furthermore that the mother seemed to be reassured by what was in fact distressing information. The reason she did so, we suggest, is that she was responding to the immediate and conflicting demands of the two frames she was operating in: consulting with the mother in the context of the examination.

Evidence that this doctor indeed felt great concern for the seriousness of the child's condition is seen in her report to the staff regarding the same issue:

Doctor: . . . uh: I'm not sure how much counseling has been dóne,
. . . wíth these parents, . . . around .. the issue . . . of
the a-v malformation. Mother asked me questions, . . .
about the operability, inoperability of it, . . . u:m
. . . which I was not able to answer. She was told it
was inoperable, and I had to say well yes some of them
are and some of them aren't. . . . And I think that this
is a . . . a . . . an important point. Because I don't know
whether . . . the possibility of sudden death,
intracranial hemorrhage, if any of this has ever been
discússed with these parents.

Here the pediatrician speaks faster, with fluency and without hesitation or circumlocution. Her tone of voice conveys a sense of urgency and grave concern. Whereas the construction used with the mother, "only danger", seemed to minimize the danger, the listing intonation used with the staff ("sudden death, intracranial hemorrhage"), which actually refer to a single

possible event, gives the impression that even more dangers are present than those listed.

Thus the demands on the pediatrician associated with consultation with the mother; those associated with examining the child and reporting her findings to the video audience; and those associated with managing the interaction as a social encounter are potentially in conflict and

result in competing demands on the doctor's cognitive and social capacities.

Just as ways of talking (that is, of expressing and establishing footing) at any point in interaction reflect the operation of multiple frames, similarly, what individuals choose to say in an interaction grows out of multiple knowledge schemas regarding the issues under discussion, the participants, the setting, and so on. We have seen that conflicts can arise when participants are oriented toward different interactive frames, or have different expectations associated with frames. Topics that the mother introduces in the consultation frame sometimes interfere with the doctor's conducting the examination, and time the doctor spends examining Jody in areas in which she has had no problems does not help the mother in terms of what prompted her to take Jody to the Child Development Center: a concern that she was regressing rather than improving in skills. Similarly, when participants have different schemas, the result can be confusion and talking at cross-purposes, and, frequently, the triggering of switches in interactive frames. We will demonstrate this with examples from the pediatrician's and mother's discussions of a number of issues related to the child's health and her cerebral palsy.

Mismatched Schemas

Before examining Jody, the pediatrician conducts a medical interview in which she fills out a form by asking the mother a series of questions about Jody's health history and current health condition. After receiving negative answers to a series of questions concerning such potential conditions as bowel problems, bronchitis, pneumonia and ear infections, the pediatrician summarizes her perception of the information the mother has just given her. However, the mother does not concur with this paraphrase:

Doctor: Okay. And so her general overall health has been good.
Mother: . . . . . . [sighs] Not really. . . . . . . uh: . . . back
. . . uh . . . after she had her last seizure, . . . uh . . .
uh . . . it was pretty cold during this .. that time . . .
a:nd uh . . . it seemed that she just didn't have much
energy,┐ mm
Doctor: ⌐mm
Mother: . . . and she uh . . . her uh . . . . motor abilities at
the time didn't seem . . . very good. . . . . She kept
bumping into walls, . . . and falling, and . . . uh

The mother's schema for health is a comprehensive one, including the child's total physical well-being. The child's motor abilities have not been good; therefore her health has not been good. In contrast, the pediatrician does not consider motor abilities to be included in a schema of health. Moreover, the pediatrician has a schema for cerebral palsy (cp): she knows what a child with cp can be expected to do or not do, i.e., what is "normal" for a child with cp. In contrast, as emerged in discussion during a staff meeting, the mother has little experience with other cp children, so she can only compare Jody's condition and development to those of non-cp children.

Throughout our tapes of interaction between Jody's mother and the pediatrician, questions are asked and much talk is generated because of unreconciled differences between the mother's and doctor's knowledge schemas regarding health and cerebral palsy, resulting from the doctor's experience and training and the mother's differing experience and personal involvement.

Mismatches based on the cp schema account for numerous interruptions of the examination frame by the mother invoking the consultation frame. For example, as briefly mentioned earlier, the mother interrupts the doctor's examination to ask about a skin eruption behind the child's ear. The mother goes on to ask whether there is a connection between the cerebral palsy and the skin condition because both afflict Jody's right side. The doctor explains that there is no connection. The mother's schema for cp does not include the knowledge that it would not cause drying and breaking of skin. Rather, for her, the skin condition and the cp become linked in a "right-sided weakness" schema.

Similar knowledge schema mismatches account for extensive demands on the pediatrician to switch from the examination to the consultation frame. When Jody sleeps, her breathing sounds noisy, as if she were gasping for air. The mother is very concerned that the child might not be getting enough oxygen. When the doctor finishes examining the child's throat and moves on to examine her ears, the mother takes the opportunity to interrupt and state her concern.

The doctor halts the examination, turns to the mother and switches to the consultation frame, explaining that the muscle weakness entailed in cp also affects the muscles used in breathing; therefore Jody's breathing sounds "coarse" or "floppy." However, this does not mean that she is having trouble breathing.

Doctor: Jody? . . . I want to look in your ears. . . . Jody?
Mother: This problem that that she hás, . . . is not . . .
interfering with her breathing, is it?
Child: /Hello/ [spoken into ophthalmoscope]
Doctor: No.
Mother: It just appears that way?
Doctor: Yes. It's very . . . it's . . . really . . . it's like
flóppy you know and that's why it sounds the way it is.
Mother: She worries me at night.
Doctor: Yes
Mother: Because uh . . . when she's asleep I keep checking on
hér so she doesn't⌐
Doctor: ⌐As you know the important⌐
Mother: ⌐I keep
thinking she's not breathing properly. [spoken while chuckling]
Doctor: As you know, the impórtant thing is that she dóes
have difficulty with the use of her muscles.⌐
Mother: ⌐mhm
Doctor: So she has difficulty with the use of her muscles, . . .
as far as the muscles of her chest, that are used with
breathing. Y'know as well as the drooling, the muscles
with swallowing, and all that⌐so all her muscles
Mother: ⌐Is there some exercise
/to strengthen or help that/.

The mother's schemas for health and cerebral palsy do not give her the expectation that the child's breathing should sound noisy. Rather, for her, noisy breathing is "wheezing" which fits into a schema for ill health: Noisy breathing is associated with difficulty breathing. In fact, the parents, in the initial medical interview at the Child Development Center, characterize Jody as having difficulty breathing, and this is entered into the written record of the interview.

These schemas are not easily altered. The pediatrician's assurance that Jody is not having trouble breathing goes on for some time, yet the mother brings it up again when the doctor is listening to Jody's chest through a stethoscope. Again the doctor shifts from the examination frame to the consultation frame to reassure her at length that the child is not having trouble breathing, that these sounds are "normal" for a child with cp.

Doctor: Now I want you to listen, Jody. We're going to listen
to you breathe. Can you? Look at me. Can you go like
this? [inhales] Good. Oh you know how to do all this.
You've been to a lot of doctors. [Jody inhales] Good.
Good. Once . . . good. Okay. Once more. Oh you have a
lot of extra noise on this side. Go ahead. Do it once
more. ⌐Once more.
→Mother: ⌐That's the particular noise she makes when
she sleeps. [chuckle]
Doctor: Once more. Yeah I hear all that. One more. One more.
[laughs] Once more. Okay. That's good. She has very
coarse breath sounds um . . . and you can hear a lot of
the noises you hear when she breathes you can hear when
you listen. But there's nothing that's⌐
→Mother: ⌐That's the kind
of noise I hear when she's sleeping at night.
Doctor: ⌐Yes.⌐

Yes. There's nothing really as far as a pneumonia is
concerned or as far as any um anything here. There's
no wheezing um which would suggest a tightness or a

constriction of the thing. There's no wheezing at all.
What it is is mainly very coarse due to the . . .
the wide open kind of flopping.

Nonetheless, during the session in which the staff report their findings to the parents, when the pediatrician makes her report, the mother again voices her concern that the child is having trouble breathing and refers to the sound of Jody's breathing as "wheezing." At this point the doctor adamantly reasserts that there is no wheezing. What for the mother is a general descriptive term for the sound of noisy breathing is for the doctor a technical term denoting a condition by which the throat passages are constricted.

As we have argued elsewhere (Tannen and Wallat, 1986), an understanding of the mother's schemas accounts for the resilience of her concern about the child's breathing, despite the doctor's repeated and lengthy reassurances. Our point here is that it is the mismatch in schemas—both the mother's association of noisy breathing with difficulty breathing, plus the doctor's dissociation of these two conditions and her emphasis on the medical definition of "wheezing" (irrelevant to the mother). Thus there is a mismatch in expectations about what counts as adequate reassurance that causes the mother to ask questions, which requires the doctor to shift frames from examination to consultation.

SUMMARY AND CONCLUSION

We have used the term frame to refer to the anthropological/sociological notion of a frame, as developed by Bateson and Goffman, and as Gumperz (1982) uses the term "speech activity." It refers to participants' sense of what is being done, and reflects Goffman's notion of footing: the alignment participants take up to themselves and others in the situation. We use the term schema to refer to patterns of knowledge such as those discussed in cognitive psychology and artificial intelligence. These are patterns of expectations and assumptions about the world, its inhabitants and objects.

We have shown how frames and schemas together account for interaction in a pediatric interview/examination, and how linguistic cues, or ways of talking, evidence and signal the shifting frames and schemas. An understanding of frames accounts for the exceedingly complex, indeed burdensome nature of the pediatrician's task in examining a child in the mother's presence. An understanding of schemas accounts for many of the doctor's lengthy explanations, as well as the mother's apparent discomfort and hedging when her schemas lead

her to contradict those of the doctor. Moreover, and most significantly, it is the mismatch of schemas that frequently occasions the mother's recurrent questions which, in their turn, require the doctor to interrupt the examination frame and switch to a consultation frame.

The usefulness of such an analysis for those concerned with medical interaction is significant. On a global level, this approach begins to answer the call by physicians (for example Brody, 1980, and Lipp, 1980) for deeper understanding of the use of language in order to improve services in their profession. On a local level, the pediatrician, on hearing our analysis, was pleased to see a theoretical basis for what she had instinctively sensed. Indeed, she had developed the method in her private practice of having parents observe examinations, paper in hand, from behind a one-way mirror, rather than examining children in the parents' presence.

The significance of the study, however, goes beyond the disciplinary limits of medical settings. There is every reason to believe that frames and schemas operate in similar ways in all face-to-face interaction, although the particular frames and schemas will necessarily differ in different settings. We may also expect, and must further investigate, individual and social differences both in frames and schemas and in the linguistic as well as nonverbal cues and markers by which they are identified and created.

APPENDIX

Transcription Conventions

⌐Brackets linking two lines show overlap:
└Two voices heard at once
Reversed-flap brackets show latching⌐
                                   └No pause
between lines
/words/ in slashes reflect uncertain transcription
/?/ indicates inaudible words
? indicates rising intonation, not grammatical question
. indicates falling intonation, not grammatical sentence
: following vowels indicates elongation of sound
.. Two dots indicate brief pause, less than half second
. . . three dots indicate pause of at least half second; more dots indicate longer pauses
→ Arrow at left highlights key line in example
Arrow at right means talk continues without interruption→
on succeeding lines of text
´ Accent mark indicates primary stress
CAPS indicate emphatic stress

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