Deborah Tannen
Frames and schemas in interaction

The terms and concepts of frame, script, and schema, as well as associated ones such as prototype, speech activity [Gumperz 1982], and template, have been variously used in linguistics (for example, Chafe [1977], Fillmore [1976]), artificial intelligence (for example, Minsky [1975], Schank and Abelson [1978], Winograd [1977]), cognitive psychology (for example, Rumelhart [1975]), anthropology (Bateson [1972], Frake [1977], Hymes [1974]), and, perhaps the best known, sociology [Goffman 1974]. Elsewhere [Tannen 1979] I have surveyed and discussed these terms and their use in these various disciplines, suggesting that they all reflect the notion of 'structures of expectations' [Ross 1975].

In doing my initial work on frames, I was inspired and influenced in my thinking by a group I then belonged to which called itself The Story Group and met regularly in the San Francisco Bay Area. I was concerned at that time almost entirely with the concept of frames as used in the fields represented by members of that group: psychology, linguistics, and artificial intelligence — that is, knowledge structures in the mind which influence and account for the comprehension (the primary interest of psychologists and artificial intelligentsia) and production (the primary interest of linguists) of discourse. Although I included the anthropological/sociological concept of frame in my review of cross-disciplinary treatment of the term [Tannen 1979], I did not make much use of it in analyzing my data. This omission — or, more generously, and perhaps more accurately, this focus — was also facilitated (as is so often the case) by the nature of the data I was then analyzing: mostly monologic narratives [1], whereas the anthropological concept of frame applies to interpretation of meaning in interaction.

[1] Since the narratives were told to someone, they necessarily took the participation of the hearer into account and therefore were interactive, and this is considered in my analysis, but nearly all the talking was done by one speaker whereas the hearer merely answered direct questions, and that minimally.

In my recent work, however, I have, together with Cynthia Wallat, who is a social psychologist, been analyzing highly interactive data: videotapes of encounters among a family, their handicapped child, and members of the clinical staff at the Child Development Center of Georgetown University's Department of Pediatrics. Driven by the desire to account for verbal interaction in these data, I almost immediately confronted the need for the anthropological concept of frames. In the present paper, then, I explore this interactive notion of frame and show how it relates theoretically to and intertwines in interaction with the knowledge structure notion which was the focus of my earlier work. This knowledge structure notion of frame, variously named 'frame', 'script', and 'schema', I shall now call 'schema' in order to distinguish it from interactive frames.

Interactive Frames

The anthropological/sociological or interactive notion of FRAMES may be understood as 'frames of interpretation', referring to the implicit or explicit superordinate message about «what is going on here» [Goffman 1974], or what is being DONE by talk [Gumperz 1982] without which no utterance (or other behavior) could be interpreted. Building on the work of Bateson [1972], Goffman [1974] offers the most comprehensive discussion and demonstration of frames, which he defines as «definitions of a situation ... built up in accordance with principles of organization which govern events . . .» [Goffman 1974:10] [2].

To use Bateson's [1972:179] classic example, a monkey needs (and is able) to know whether behavior encountered in another monkey which is typically associated with one activity — for example, a bite, which is associated with 'combat' — is intended in a given instance as combat or rather as play. 'Play' and 'combat' are alternative FRAMES, or definitions, of what is going on, which give meaning to the behavior, biting. People are confronted with similar interpretive tasks in communication. In order to comprehend any utterance, a listener (and a speaker) must know within which frame it is intended: for example, is an utterance intended within the frame of joking? Is it fighting? Is it an insult? Moreover, something intended as a joke but interpreted as an insult can trigger a fight. An utterance could of course be both, and being aware of this duality, a speaker can camouflage an insult as a joke.

A mistake in identification of frames can be funny or devastating. The results were serious, for example, in the famous incident in which Orson Welles' radio performance of H. G. Wells' «War of the Worlds» was mistaken by listeners who tuned in too late to catch the frame identification as a radio play to be a real newscast about invaders from outer space. Intentionally misleading establishment of frames underlies humor [Raskin 1984].

---

[2] He does not, however, in his initial work focus analysis on talk per se; however, a later article [Goffman 1981] does.

Even unintentionally mistaken frames frequently have amusing results. For example, I was talking to a friend on the telephone; in the middle of our friendly chat, he suddenly yelled, «YOU STOP THAT!» I knew from the way he yelled this that the interjection was not addressed to me, even though I could not see him. I quickly surmised that it was addressed to a dog, and I remarked that he addressed the dog in something that sounded like a southern accent. My friend explained that this was because the dog had learned to respond to commands from its owner in that accent, and he further illustrated this fact by telling me how he invites the dog to play: «I say, 'GO GIT THAT BALL!'» The dog, however, still in earshot, could not understand the words 'I say' that identified the frame, «ILLUSTRATING how I talk to the dog when I want to play with him», but recognized the signal of the frame 'PLAYING FETCH' and began running about the room looking for something to fetch. (He settled upon a stuffed frog). This example demonstrates, as well, that people (and dogs) identify frames of interaction by both linguistic signals — that is, the words uttered — and paralinguistic signals — that is, HOW they are uttered, or what Gumperz [1982] calls «contextualization cues»: intonation, pitch, loudness, voice quality, rate of speech, and so on. In the preceding example, the way my friend uttered «you stop that» signalled the frame 'disciplining a pet' rather than 'chatting with a friend'. The interactive notion of frame, then, refers to a superordinate definition of what is being engaged in HOW a speaker means what s/he says.

Knowledge Structure Schemas

The term SCHEMA, as I will be using it, refers to KNOWLEDGE STRUCTURES in the minds of participants in interaction — expectations based on prior experience about objects, events, and settings. 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. To give the often quoted example from Wittgenstein, the word *hammer* can have no meaning to someone who has never seen a hammer used. Or, 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 a sequence of actions associated respectively with sailing and flying. 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 phenomenon became clear to researchers in artificial intelligence as soon as they tried to get computers to understand even the simplest discourse. For instance, in the now famous example of Schank and Abelson [1978], if you say you went into a restaurant and make reference to «THE waitress», you are assuming your audience is familiar with the expectation that restaurants have waitresses or waiters. If you say the hamburger was undercooked and you left a small tip, you are assuming familiarity with a complex network of expectations about the responsibilities of the waitress and the activities appropriate to

a customer. All of these expectations about what goes on in a restaurant, called by Schank and Abelson a 'restaurant script', amount to structures of expectations or knowledge structures associated with a particular setting, restaurants. The realization that much of what is necessary to understand discourse — indeed, much of what is understood from discourse — is not actually verbalized in the discourse, became clear to researchers in linguistics as soon as they began to study natural conversation (for example Lakoff [1973] and Brown and Levinson [1978] on politeness phenomena), and to speech act theorists who consequently hit upon the notion of indirect speech acts [Searle 1975].

At an earlier stage of this study, I referred to the interactive notion of frame as 'dynamic' and the knowledge structure notion of schema as 'static'. Indeed, it is easy to conceptualize a restaurant script, for example, as a static set of expectations about what goes on in a restaurant — a set which could be made explicit and (for the purposes of artificial intelligence) told to a computer or (for the purposes of foreign language learning) told to a student. However, I have now rejected that conceptualization, remembering that all types of frames and scripts 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 not formed and stored once and for all but rather are continually checked against current experience and revised.

Interactive Frames and Knowledge Structure Schemas Interact

The dynamic processes of forming, revising, and applying expectations about the signalling of frames of interpretation as well as knowledge structure schemas about people, objects, and situations, co-operate in interaction to make communication possible. To illustrate again with the example of my telephone conversation with my friend who interjected an order to a dog in our friendly chat: I used my familiarity with his use of paralinguistic cues to surmise that he had shifted suddenly from the frame 'chatting with a friend' (in this case, me). But how did I know that he was disciplining a dog and not a cat or a child? I had to draw not only upon my ability to identify his paralinguistic features as associated with 'disciplining a non-adult creature', but also upon my knowledge that my friend was taking care of someone's dog — part of my SCHEMA about this friend's immediate situation — as well as how this friend would be likely to address me, a dog, or a child — that is, a SCHEMA for his habitual way of signalling interactive frames. Had my schema included the information that my friend had a small child, was allergic to dogs, and was in the habit of addressing his child with mock-serious imperiousness, I might have interpreted the same linguistic cues as signalling the related frame, 'disciplining a misbehaving child'. Thus, knowledge structure schemas refer to sets of expectations about people, objects, and situations, including expectations

about which linguistic and paralinguistic features are to be used to signal interactive frames, that is, how any given utterance is intended. Thus we have, to complicate matters, two somewhat different but clearly related senses of the knowledge structure sense of schema: one a set of expectations about objects, people, and situations (as in the restaurant script or my friend's taking care of a dog), and the other a set of expectations about how language is used in interaction, how interaction works (as in how my friend would talk to me or a dog). This latter sense then comes rather close to the 'principles of organization' which Goffman, as quoted earlier, postulates as the basis upon which (interactive) frames are 'built up'. In this sense, knowledge structure schemas account for the routinized nature of talk in interaction [3] and for the identification of interactive frames. In order to clarify and investigate these hypotheses, the remainder of this paper illustrates the operation of frames and schemas in a videotapes interaction in a medical setting: the examination of a child by a pediatrician in the presence of the mother.

The Study

The current analysis is part of an ongoing project analyzing videotapes made at the Child Development Center, a facility of the Georgetown University Medical School [4]. The central focus of analysis is the videotape and transcription of an interaction in which a pediatrician examines an eight-year-old cerebral palsied child whom we call Jody, in her mother's presence. In addition, the pediatrician and the mother viewed the tapes with us, and they as well as other members of the professional staff discussed with us their recollections and interpretations.

Interactive Frames in the Pediatric Examination

Early analysis of the videotape of the pediatrician examining Jody (Tannen and Wallat [1982], [in press]) indicated that the pediatrician used three distinct linguistic registers in addressing each of three audiences. When talking to the mother, she spoke in an unmarked conversational register. In addressing the child, she used a teasing register characterized by exaggerated shifts in pitch and prosody, and drawn out vowel sounds. In stark contrast to this intonationally exaggerated register, the pediatrician used a markedly flat intonation to give a running account of the findings of her examination, addressed to no present party, intended for the video audience of pediatric residents. We call this 'reporting register'. It is clear that the mother perceived this reporting register as reflecting the doctor's engagement in significant conduct of busi-

[3] Widdowson [in press] calls this sense of schema a 'procedural schema'.
[4] Findings of previous analysis are reported in Tannen and Wallat [1982] and [in press], Wallat and Tannen [1982].

ness, for the mother never interrupts to ask a question when the doctor is talking in this mode. (The notion of 'reporting register' accounts for a similar phenomenon described by Cicourel [1975] in an analysis of a medical interview).

The pediatrician shifts from one register to another, sometimes abruptly, sometimes gradually. In the following example, she shifts from entertaining Jody to reporting findings and back to managing Jody in a prosodically marked teasing tone [5]:

Dr.: That's my light.
Child: /This goes up there./
Dr.: It goes up there. That's right. 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. Now let us look in your mouth. Okay? With my light can you open up real big?...Oh, bigger...Oh bigger-...Bigger.

Thus it is clear that the pediatrician is required to shift registers in dealing with three audiences. However the situation is even more complex than that. As Goffman [1981: 128] points out, «participants, over the course of their speaking, constantly change their footing», FOOTING being «another way of talking about a change in our frame for events», defined as «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». Not only does the pediatrician have to talk differently to each of three audiences: the mother, the child, and the video audience, but she must deal with each of these audiences in various ways, depending upon the frame she is operating within.

For this interaction, two often conflicting frames are evident: an examination frame, and a consultation frame [6]. 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, when the pediatrician asks the mother for information relevant to the child's condition, she is still focused on the examination of the child, following a pre-set series of focuses of attention. However, when the mother asks the pediatrician questions of her own — for example, about a skin eruption behind the child's right ear, and the doctor looks behind the ear in order to answer the mother's question — then the doctor must interrupt the examination, and shift

---

[5] In transcription brackets ([) = simultaneous speech; /words/ in slashes are not certain. Question mark (?) = rising intonation, not grammatical or semantic question. Period (.) = falling intonation, not grammatical sentence. Comma (,) indicates clause-final intonation («more to come»). Three dots (...) indicate pause of roughly half second.

[6] These are certainly not the only frames in this interaction, but they are the most prominent, and the ones most clearly contrasting in salience for the mother and doctor. That is, it seems that the examination frame is primary for the doctor, whereas the consultation frame is primary for the mother. Another frame, a video frame, reflects the fact that the interaction is being videotaped. This overlaps with the examination frame, in that the pediatrician reports her findings to the video audience of pediatric residents. It also overlaps with a frame for social encounters, as the doctor is 'in charge' in this setting and monitors the readiness of the video crew as well as managing the child, telling the mother where to sit, and so on.

to a role associated with consultation with the mother. What on the surface appear to be instances of the same activity — examining the child — are seen as very different when they are understood as serving different frames. In the first case the doctor is adhering to a pre-set sequence of events 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 what she refers to at the outset as the 'standard pediatric evaluation' that she is there to perform.

An excerpt from the data 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. The mother has recently learned that Jody has an arteriovenous malformation in her brain, and she asks the doctor 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.
                                    Dr.: ⌐Yes.
        cause she's well I mean like right now, . . . uh . . .
        in her present condition.
                    Dr.: ⌐mhm
        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 cán happen
        . . . um . . . thát would be the danger. . . . Fór that.
                            Mo.: ⌐mhm⌐
        But they're . . . mm . . . not going to be
        something that will get worse as time goes on.
Mother: Oh I see.
Doctor: But they're just there. Okay?

By using circumlocutions, 'buffer language', hesitations, conditional constructions («that would be the danger»), and a negative statement («they're not going to get worse»), the doctor succeeds in reassuring the mother (to the doctor's own surprise when she later viewed the videotape), although in the process she appears unsure of herself. In contrast, when reporting to the staff, the doctor refers to the same condition with obvious concern, emphasizing the dangers of «sudden death, intracranial hemorrhage». In this context, she is totally fluent and appears very confident and assertive.

It seems clear, then, that in the context of the examination, the doctor was caught in a conflict between the demand of the consultation frame that she a) give the mother the information requested based on her medical knowledge, and b) deal with the emotional impact of that information on the mother, and demand of the examination frame that she not take a lot of time out from examining the child. The information that the child's life is in danger is likely to upset the mother and therefore require significant counseling time. (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 in-

formed 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 does balance the demands of multiple frames, makes it easy to understand why others might avoid this).

Knowledge Structure Schemas in the Pediatric Interaction

Knowledge structure mismatches account for extensive demands on the pediatrician to switch from the examination to the consultation frame. For example, 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, and when the doctor finishes examining the child's throat and moves on to examine her ears, the mother takes the opportunity to interrupt and introduce the consultation frame, by stating her concern. The doctor halts the examination, turns to the mother, and explains that cerebral palsy entails poor muscle control, and that this includes the muscles used in breathing; therefore Jody's breathing sounds 'coarse' or 'floppy'. However, this does not mean that she is having trouble breathing. The mother's schemas for health and cerebral palsy do not give her the expectation that the child's breathing should sound noisy. In addition, she has a schema for 'wheezing' that leads her to believe that noisy breathing is associated with difficulty breathing. In fact, the parents, in the initial medical interview with a parent coordinator, characterize Jody as having difficulty breathing, and this is entered into the written record of the interview. These schemas, based on the parents' experience with non-cp children and limited experience with cp children, are not easily altered. The pediatrician's assurance that Jody is not having trouble breathing goes on for some time because of the mother's repetition of her concern. Nonetheless, the mother brings it up again when the doctor is listening to Jody's chest through a stethoscope, and again the doctor shifts from the examination frame to a consultation frame to reassure her at length that the child is not having trouble breathing, that these sounds are 'normal' for a child with cerebral palsy. Yet again, when the pediatrician makes her report to the parents, the mother 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). Thus the mismatched schemas for health and for cerebral palsy continue to require frame shifts to consultation in contexts that are framed differently for the professionals. Because of these differences in knowledge structure schemas, the mother is easily reassured with respect to a condition that is truly dangerous, the arterio-venous malformation, but cannot be reas-

sured with respect to a condition that is not, the noisy breathing. It is likely, ironically, that the very reason the doctor employs exceedingly reassuring paralinguistic features in answering the mother's questions abouth the a-v malformation is that her schema informs her of the very real danger. Perhaps the doctor is somewhat less reassuring (in terms of paralinguistics, not in terms of information given) in answering the mother's questions about the breathing because the doctor's schema gives her the assumption that condition is not dangerous.

Summary and Conclusion

I have suggested that the terms FRAME and SCHEMA be used to refer to and distinguish between an interactive and a knowledge structure notion of structures of expectation, respectively, and that an understanding of frames and schemas helps account for interaction in a pediatric interview/examination. There is every reason to believe that such 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, and we may expect the usual individual and social differences both in the frames and in the paralinguistic and nonverbal features by which they are signalled.

REFERENCES

Bartlett, Frederic C. [1932], *Remembering*, Cambridge, Cambridge University Press.

Bateson, Gregory [1972], *Steps to an ecology of mind*, NY, Ballantine.

Brown, Penelope, and Stephen Levinson [1978], *Universals in language usage: Politeness phenomena*, in Esther Goody (ed.), *Questions and politeness*, Cambridge, Cambridge University Press, pp. 56-289.

Chafe, Wallace [1977], *Creativity in verbalization and its implications for the nature of stored knowledge*, in R. Freedle (ed.), *Discourse production and comprehension*, Norwood, NJ, Ablex, pp. 41-55.

Cicourel, Aron [1975], *Discourse and text: Cognitive and linguistic processes in studies of social structure*, in «Versus» 12, pp. 33-84.

Fillmore, Charles J. [1976], *The need for a frame semantics within linguistics*, Stockholm, Skriptor, pp. 5-29.

Frake, Charles O. [1977], *Plying frames can be dangerous: Some reflections on methodology in cognitive anthropology*, in «The Quarterly Newsletter of the Institute for Comparative Human Cognition», 1, pp. 1-7.

Goffman, Erving [1974], *Frame analysis*, NY, Harper & Row.

— [1981], *Footing. Forms of talk*, Philadelphia, University of Pennsylvania Press, pp. 124-159.

Gumperz, John J. [1982], *Discourse strategies*, Cambridge, Cambridge University Press.

Hymes, Dell [1974], *Ways of speaking*, in R. Bauman & J. Sherzer (eds.), *Explorations in the ethnography of speaking*, Cambridge, Cambridge University Press, pp. 433-451.

Lakoff, Robin [1973], *The logic of politeness, or minding your p's and q's*, Papers from the Ninth Regional Meeting of the Chicago Linguistics Society, pp. 292-305.

Minsky, Marvin [1975], *A framework for representing knowledge*, in P. H. Winston (ed.), *The psychology of computer vision*, New York, McGraw Hill, pp. 211-277.

Raskin, Victor [1984], *Semantic Mechanisms of Humor*, Dordrecht — Boston — Lancaster, D. Reidel.

Ross, Robert N. [1975], *Ellipsis and the structure of expectation*, San Jose State Occasional Papers in Linguistics, 1, pp. 183-191.

Rumelhart, David E. [1975], *Notes on a schema for stories*, in Daniel G. Bobrow & Allan Collins (eds.), *Representation and understanding*, NY, Academic Press, pp. 211-236.

Schank, Roger C. & Robert P. Abelson [1978], *Scripts, plans, goals, and understanding: An inquiry into human knowledge structures*, Hillsdale, NJ, Erlbaum.

Searle, John [1975], *Indirect speech acts*, in Peter Cole & Jerry Morgan (eds.), *Syntax and semantics, vol. 3: Speech Acts*, NY, Academic, pp. 59-82.

Tannen, Deborah [1979], *What's in a frame? Surface evidence for underlying expectations*, in Roy Freedle (ed.), *New directions in discourse processing*, Norwood, NJ, Ablex, pp. 137-181.

— & Cynthia Wallat [1982], *A sociolinguistic analysis of multiple demands on the pediatrician in doctor/mother/patient interaction*, in Robert Di Pietro (ed.), *Linguistics and the professions*, Norwood, NJ, Ablex, pp. 39-50.

— & Cynthia Wallat, [in press], *Doctor/mother/child communication: Linguistic analysis of a pediatric interaction*, in Sue Fisher & Alexandra Dundas Todd (eds.), *The social organization of doctor/patient communication*, Washington, D. C., The Center for Applied Linguistics.

Wallat, Cynthia & Deborah Tannen [1982], *The dilemma of parent participation in medical settings: A linguistic analysis*, presented at American Sociological Association Annual Meeting, San Francisco, September 1982.

Widdowson, Henry [in press], *Procedures for discourse processing*, in Chris Candlin (ed.), *Proceedings of conference, Interpretive Strategies*.

Winograd, Terry [1977], *A framework for understanding discourse*, in M. A. Just & P. A. Carpenter (eds.), *Cognitive processes in Comprehension*, Hillsdale, NJ, Erlbaum.