

On Hedging in Physician-Physician Discourse

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1. Purpose.

Following a pilot project investigating some difficulties inherent in providing and teaching about pediatric intensive care, we undertook a comprehensive linguistic and sociologic study of a large pediatric intensive-care unit (ICU). The preliminary study had led us to believe that technology dominates the ICU (Frader 1979). We, therefore, set out to collect detailed information about the activities of and interaction among the physicians working in the unit. Our initial hypothesis was that physicians are comfortable when dealing with medical-technical matters but that they experience difficulties in the form of frustration, depression, and/or anxiety only when faced with ethical matters, a domain in which they lack formal training. This hypothesis was ultimately rejected: the data showed a remarkably high degree of uncertainty in the medical-technical domain itself, suggesting that this in fact was the cause of the emotional difficulties encountered. (See Frader, Bosk, and Prince 1980, Bosk 1980.)

2. The corpus.

Before describing the corpus on which the linguistic analysis was based, we shall describe briefly the nature of the ICU and of morning rounds. First, the hospital at which the study took place has two ICUs for children: the neonatal ICU, for newborns, and the one under discussion here, the pediatric ICU. Patients are brought to an ICU when either a chronic or an acute condition calls for intensive monitoring, medical therapy, and/or life-support. The physicians generally associated with ICUs are anesthesiologists, since they, it turns out, are specialists in the domains of monitoring procedures and life-support

systems. Since this ICU is a pediatric one, there are also pediatricians on the staff. The physicians represent a variety of levels, from second-year pediatric residents to fellows in pediatric intensive-care and anesthesiology and fully trained pediatricians and anesthesiologists. The residents and fellows are transient, while the attending physicians are drawn from a stable pool of intensive-care staff.

Physician interaction in the ICU is centered in the morning rounds. Morning rounds, it should be pointed out, at technologically advanced institutions such as this one, no longer involve the physical copresence of physicians and patient but rather now consist of the staff physicians meeting daily around a conference table, physically separated from patients, relatives, and other hospital staff members, e.g. nurses. The procedure followed is that the case of each acutely ill patient is presented by his/her attending physician, who gives first, in the case of a new admission, relevant background information, and then, in all cases, a report on the present condition, which includes a detailed quantitative analysis of bodily functions, e.g. blood pressure, heart rate, fluid intake and output. The whole group then takes part in diagnosing, if relevant, and planning further treatment, which may involve the termination of present treatment, including the termination of life-support.

The corpus on which the linguistic analysis was based was obtained by audio-taping the morning rounds on randomly selected days between August 1978 and January 1979. Twelve hours of these tapes were then chosen, again randomly, for transcription by two research assistants in linguistics, Catherine N. Ball and Deborah Schiffrin. The tapes were transcribed narrowly, i.e. without editing of dysfluencies, and intonation was marked where it was deemed unpredictable. The transcriptions

and tapes were then turned over to one of the authors (J.F.), who was also a staff pediatrician in attendance at the morning rounds. He reviewed the transcripts, correcting them when necessary, replaced all identifying references to individuals and institutions with a code known only to him, and destroyed the tapes and original transcripts.

3. Hedging.

Linguistically, the most salient feature of the corpus is the number and frequency of hedges. Let us take as a preliminary definition of hedge one adapted from G. Lakoff (1972:195): a word or phrase 'whose job it is to make things fuzzier'. Following this definition, we can identify in the corpus between 150 and 450 hedges per hour, or more than one every fifteen seconds. Consider, for example:

defⁿ of hedging

(1)a. Q: What was going to be your plan for the day?

Let's say he doesn't seize--

A: Well, I think he's uh-- I think he's always se-- I still think he's seizing a-- a little bit. But...they've really been reduced. Frequency's from a hundred percent of the time to once every ten or fifteen minutes or some- like that. (A.II.274)

b. It may or may not be a risky issue. And I'd-- I--

I-- There is evidence that's been presented that makes me think that it might be a little risky.

(S15.II.4)

- c. So when the-- the patient got here, we...seemed to have...at least what seemed to be a-- a child with uh increased intracranial pressure, perhaps as a-- as a primary event, perhaps secondary, um: it was-- i-- it was a bit unclear exactly what was going on. (A.II.19)

While, by definition, all hedges make things 'fuzzy' in some sense, a closer look reveals that they make things fuzzy in one of (at least) two distinctly different ways. One class of hedges introduces, or is responsible for, fuzziness within the propositional content proper, while the other class of hedges correlates with fuzziness in the relationship between the propositional content and the speaker, that is, in the speaker's commitment to the truth of the proposition conveyed. As an illustration, compare the invented sentences in 2:

2 types of fuzziness

- (2)a. His feet were blue.
 b. His feet were sort of blue. *SQI*
 c. I think his feet were blue.

The sentence in 2a conveys the proposition that his feet were blue and, if uttered by a cooperative speaker in a natural context, conventionally (or, following Gazdar 1979, conversationally) implicates that the speaker knows that his feet were blue. Thus, in a Gazdar-type model of context-incrementation, the proposition His feet were blue would be added to the context under the modal operator K, The speaker knows that, as in 3a. This is the standard situation where there is no hedging. The sentence in 2b, on the other hand, conveys a different proposition: His feet were sort of blue or His feet were nonprototypi-

cally blue, but it would be added to the context under the same K-operator, as shown in 3b. That is, the speaker of 2b would be as fully committed to the truth of the proposition s/he is conveying as would the speaker of 2a. Sort of, then, is the type of hedge that affects the propositional content but not the speaker-commitment. Let us call such hedges Approximators. It is this type of hedge that is in fact discussed in G. Lakoff 1972, where it is associated with Rosch's (1977) psychological studies of subjects' perception of class membership in terms of prototypes. We shall return to them later.

In sharp contrast, 2c conveys the same proposition as 2a, His feet were blue. That is, the hedge in 2c does not affect the propositional content. What it does do is implicate that the speaker is less than fully committed, or committed in some marked way, to the truth of the proposition. In a Gazdar-type model, such a proposition would be added to the context under a P-operator, For all the speaker knows, as shown in 3c:

- (3)a. [K] His feet were blue.
 b. [K] His feet were nonprototypically blue.
 c. [P] His feet were blue.

If we take cases like 2a, where the speaker implicates full personal commitment to the truth of the proposition conveyed by simply asserting the proposition, to be instances of unmarked speaker-commitment, we may then distinguish those hedges, e.g. I think, that indicate a marked speaker-commitment. We shall call such hedges Shields. It is this type of hedge that R. Lakoff (1972:244) is speaking of with respect to

int ~K (his feet were blue)

approximators

no - [K] (Speaker knows) would not under K ~ (knows his feet were blue)

Shields

'verbs like guess, modal uses like epistemic must, and sentence-forms like tag-questions' and which has appeared elsewhere in the literature in connection with NEG-raising (e.g. Prince 1976) and related phenomena. In current Gricean frameworks, where a sharp division is made between truth-conditional semantics and non-truth-conditional pragmatics (e.g. Kempson 1975, Gazdar 1979, Karttunen and Peters 1979), Approximators and Shields have little in common: Approximators contribute to the semantics, by indicating some markedness, i.e. non-prototypicalness, with respect to class membership, while Shields affect the pragmatics, by inducing implicatures conveying markedness with respect to speaker-commitment. We shall now look more closely at Approximators and Shields in order to get a clearer understanding of their functions in this corpus of physician-physician discourse.

3.1. Approximators.

As mentioned above, Approximators affect the truth-conditions of the propositions associated with them. To see the interaction of Approximators with truth-conditions, consider the following examples adapted from G. Lakoff 1972:

- (4)a. A robin is a bird. (TRUE)
- b. A chicken is a bird. (TRUE?)
- c. A bat is a bird. (FALSE)
- d. A cow is a bird. (FALSE)
- (5)a. A robin is a sort of a bird. (FALSE)
- b. A chicken is a sort of a bird. (TRUE)
- c. A bat is a sort of a bird. (FALSE?)

- d. A cow is a sort of a bird. (FALSE)
- (6)a. In a manner of speaking, a robin is a bird. (FALSE)
- b. In a manner of speaking, a chicken is a bird.
(FALSE?)
- c. In a manner of speaking, a bat is a bird. (TRUE)
- d. In a manner of speaking, a cow is a bird. (FALSE)
- (7)a. A flounder is a fish. (TRUE)
- b. Esther Williams is a fish. (FALSE)
- (8)a. A flounder is a regular fish. (FALSE)
- b. Esther Williams is a regular fish. (TRUE)

Thus we see that the addition of an Approximator to some proposition P_i results in the formation of a proposition P_j , where $i \neq j$.

A closer look at Approximators, however, reveals that not all work the same way and that they themselves may be of (at least) two types. Consider 9 and 10:

- (9)a. He also has a somewhat low interior larynx.
(A.I.099)
- b. Q: What about his ears? Is he still draining serosanguinous fluid?
A: Uh: it's more just sort of crusted than-- uh not...really draining. (A.II.081)
- c. He had uh some ocular-- interesting ocular movements uh, almost describable as ocular bobbing. With sort of vertical uh motions... (A.II.081)
- d. ...and she noticed that he was a little bit on the blue side, um: and bu-- sh-- and she first said that

earlier in the day she sort of noticed s--
some blue-- his feet were a little bit blue and
 then um: the instant before that-- she noticed
 that he wasn't breathing, he had a perioral
 cyanosis. (A.I.074)

- (10)a. His weight was approximately three point two kilo-
 grams, um which is essentially what his birth weight
 was. (A.II.121)
- b. I and 0 was about ten fifty over five fifty. (S12.015)
- c. Um he had no Lasix for twenty-four hours and main-
 tained about...um one cc. per kilo per hour um urine
 output. (S12.170)
- d. Um: the: baby's blood pressure on the ride over
 here was also about uh something between forty and
 fifty palpable. (A.II.021)

The type of Approximators illustrated in 9 exemplify G. Lakoff's hedges, which relate to Rosch's work on class-membership, mentioned above. That is, the coparticipants have at their disposal a preset lexicon of relevant terms for symptoms, e.g. crusted, blue. Their goal is to classify the patient with respect to these terms so that diagnoses may be made. In the unmarked--that is, unhedged--case, these terms implicate prototypicalness. That is to say, if someone is described as having crusted ears, they should be prototypically crusted, as ears go. Now, in the not unlikely event that the patient's symptoms do not match the prototype, (at least) four logical possibilities present themselves: (A)The speaker may use an irrelevant term, i.e. a

term that exists in the English lexicon but which bears no relevance to medical diagnoses, e.g. set (as for chocolate pudding) instead of just sort of crusted, mauve instead of a little bit on the blue side, or (B)S/he may coin a brand-new term, or (C)S/he may ignore the discrepancy between perceived reality and implicated prototypicalness and simply use the closest relevant term, or (D)S/he may use the closest relevant term but indicate in some way that perceived reality is not prototypical with respect to that term. The first possibility, using an irrelevant term, seems plausible but in fact does not occur in the corpus: it appears that the discourse is highly goal-directed and any information conveyed is intended to further the coparticipants toward their goal, e.g. making a diagnosis.¹ The second possibility, coining a new term, is even more unsatisfactory, for the same reasons: a new term would convey nothing to the coparticipants and would thus not facilitate diagnosing, that process being based on a knowledge-store encoded in old terms. The third possibility, ignoring the mismatch, may sometimes suffice, but not if the speaker suspects that the mismatch between perceived reality and prototype may in fact be significant. In any event, it should be pointed out that a linguistic analysis would not be able to detect such cases. When the speaker does consider that the mismatch is or may be relevant, the fourth possibility, the adaptation of an old term to the new instance, with the adapting being marked, is the most reasonable choice, and one subclass of Approximators is used to do just such adapting. These Adaptors, as we shall call them, occur in the data most frequently in the description of symptoms, as in 9, but of course are not limited to that domain, e.g. 11:

*↓

?

adaptors

- (11)a. I didn't try a larger tube, because he came in with a two and a half from the other place that was almost falling out, which is why we changed it right away. (A.II.210)
- b. The car hit him on his left side and, as described by his parents, he sort of grazed off the car um and fell to the ground. He didn't-- he wasn't really thrown. (A.II.462)
- c. Q: What would the family like you to do?
A: I don't think the family quite realizes, entirely.

A second type of Approximators is illustrated in 10. Here there is no necessary problem in the match between language and perceived reality: precise numbers do exist for a patient's weight, I and O (fluid intake and output), blood pressure, etc. Here the point is rather that the precise term is not relevant (10a,b) or is not immediately available, or, in a slightly different vein, what one intends to convey is a range of items, the term given being typical or exemplary of the range and the hedge indicating that it is in fact a range. In 10c, the range is over time, while, in 10d, the range is over the methods used to determine blood pressure. (There are, it turns out, two different monitoring systems which give slightly different figures.) Such hedges, which we shall call Rounders, are extremely common in the data in the domain of measurements. Both Adaptors and Rounders may be said to occur when a speaker is attempting to correlate an actual situation with some prototypical, goal-relevant situation, the term chosen,

rounders

e.g. crusted, ten fifty over five fifty, indicating the prototypical situation, the hedge chosen, e.g. sort of, about, indicating that the actual situation is close to but not identical with the prototypical situation.

3.2. Shields.

In contrast, Shields, as pointed out above, do not affect the truth-conditions of the propositions associated with them. Thus, if we prefix the sentences of 4 through 8 with I guess or It seems that, the truth-conditions are unchanged; the only effect is that the speaker has implicated that s/he is not fully and personally committed, i.e. committed in the usual or 'unmarked' way, to the belief that the relevant state of affairs actually obtains.

One might infer that marked speaker-commitment always involves the expression of doubt of some kind, but close examination of the Shields in the corpus reveals that the situation is rather more complex. As in the case of the Approximators, we may distinguish two classes of Shields: one, which we shall call Plausibility Shields, which does in fact involve something related to doubt, and another, which we shall call Attribution Shields, which primarily simply attributes the belief in question to someone other than the speaker, the speaker's own degree of commitment being only indirectly inferrable. Consider 12 and 13:

- (12)a. And I think we can probably just slow him down to a little over maintenance, since he's out under the-- he's out under the warmer, uh which will

increase his uh fluid requirements uh...ten or twenty percent. But uh as far as I can tell right now he's-- you can wean him. (A.II.156)

b. Q: Can you explain this...for me?

A: Well-- I think you might explain that it's just-- this really was...spinal. (A.II.673)

c. I think you can say the DIC is consistent with uh: brain necrosis. (A.II.739)

d. Q: Why do you think that he had such a large urine output?

A: Well he had Mannitol, he had Lasix, uh he had Albmium, um...I had to believe he was hypovolemic, and he seemed to correct them awfully quickly, um and I was wondering whether there was any...any renal problems, but uh...basically hard to say. (A.II.133)

e. I don't see that you have anything to lose by giving the Mannitol. (A.II.045)

(13)a. [...] he uh had a respiratory arrest, uh followed shortly thereafter by a uh uh decreasing heart rate, eventually to zero at home. Was resuscitated by the mother, who uh...has uh some CPR experience (in in) (studied) some rescue-type work. Um and according to her estimates, she got the baby's high heart rate back within...two to three minutes or so. (A.I.015)

b. The patient was taken to [H₃], where uh the baby

was put on uh one of the medical floors, and then proceeded to have a respiratory arrest. Again. Um which...was noted presumably very quickly; uh the child was intubated by the uh anesthesiologist and uh...resuscitated. There was presumably no uh acute decrease in heart rate. (A.I.083)

c. A thing that was convincing was the: presumed response-- the fact that it-- there was-- at least to [fnD₁₆] at the time, there was a... dramatic response after pushing Mannitol. (A.II.057)

d. Q: Has he had uh episodes of aspiration in the past?

A: He: never-- according to the mo-- as far as I could tell from the mother, never had documented aspiration. (A.II.067)

e. Q: Why was he losing weight so badly? Can you put that together in any way?

A: Well mother says that he's-- he has-- he's a-- in a way: a very finnickier eater. (A.II.166)

Plausibility Shields like those illustrated in 12 implicate various levels of lack of certainty. That is, in each case, the speaker is indicating that s/he is less than fully committed to the truth of the proposition conveyed. In particular, we claim that unmarked, i.e. unhedged, assertions implicate, all other things being equal, that the speaker has knowledge via observation and/or logical reasoning that the proposition conveyed is true, while assertions marked by Plausibi-

lity Shields implicate that the speaker is asserting a belief acquired via plausible reasoning. While it has often been assumed that only logical inferences are at issue in reasoning tasks, recent research in cognitive psychology and artificial intelligence indicates that much inferencing at issue in everyday reasoning and, therefore, in discourse, depends on plausible reasoning rather than on deductive logic. (See, for example, Collins 1978, Webber 1978.) What has not been appreciated, however, is that speakers can, if they choose, distinguish between the outputs of these different kinds of reasoning, marking the outputs of plausible reasoning when they find it relevant to do so. However, it is not clear whether speakers distinguish significantly between different kinds of plausible reasoning, whether there are different levels of uncertainty which are implicated by speakers and understood by hearers. Parenthetically, note that, in a Gazdar-type model of context-incrementation, all propositions marked by what are here called Plausibility Shields would be added to the context under the same P-operator, For all the speaker knows. In a Horn-type model (Horn 1980), on the other hand, some would be added under a Possibility operator, equivalent to True in some possible world, and some under a Probability operator, equivalent to True in most possible worlds. Only further empirical research can show whether one, two, or more levels of uncertainty is required for a model of natural-language discourse.

In a nontheoretical vein, however, and within the medical field itself, there has already been some expression of concern over this issue, particularly over the so-called vagueness of verbal probability

estimates in the domain of diagnosing. Bryant and Norman 1979 report that they had physicians rank thirty Plausibility Shields (our term) in sentences making diagnoses (e.g. sentences like 12b,c) with respect to the likelihood of the presence of the disease. The findings were that no two Shields were identical and that, more seriously, there was little consistency between subjects. In fact, Bryant and Norman report (p. 206) that 'a radiologist used "consistent with" when certain of his diagnosis, but others showed this could be an expression of low certainty for them.' However, Bryant and Norman's study is measuring Shields out of context and across a diverse sampling of physicians, and it does not take into account discourse in a natural setting, where the coparticipants are members of a tighter speech-community and have well-defined hypotheses about one another's beliefs, goals, and inferential processes. Note, in this vein, that a typical way of making an indirect request for information is to make a statement hedged by one of a number of Plausibility Shields, just in case the speaker has reason to believe, on extra-linguistic grounds, that the addressee has direct, or more direct, knowledge of the truth of the statement and that the addressee knows that this is the case, e.g. 14:

(14)a. S₁: I take it he is not monitored.

S₂: He is not monitored.

S₁: Yeah. (S.I.041)

b. S₁: You-- you apparently have considered a gastrostomy already.

S₂: Well I-- when I looked at the kid, yeah.

(S.II.374)

Both indirect questions in 14 were transcribed with statement intonation. Out of context, in a Bryant and Norman-type questionnaire, they would no doubt receive a wide range of understandings. However, in context, they were immediately and appropriately understood as requests for information. In fact, we find no evidence for the supposition that Shields impede communication and, therefore, no support for Bryant and Norman's proposal that such terms be replaced by numerical ratings.²

As for distribution, Plausibility Shields occur in all discourse domains in the corpus but are characteristic of utterances involving planning (12a,e) and diagnosing (12b,c,d).

If we now turn to the Shields illustrated in 13, the Attribution Shields, we see that they have a different function from the Plausibility Shields, at least at the primary level: they implicate that the speaker is speaking from knowledge or beliefs acquired via hearsay, in the broadest sense of the term, that is, that the belief in the truth of the proposition conveyed is to be attributed to another, the attributee sometimes explicitly specified (13a,c,d,e), sometimes not (13b). Note that, both in the unmarked, i.e. unhedged, case, e.g. 15a, and in the case of a proposition accompanied by an Attribution Shield, e.g. 15b, nothing is explicitly stated about the speaker's own level of commitment:

- (15)a. There was a dramatic response after medication.
- b. According to Dr. Smith, there was a dramatic response after medication.
- c.?According to me, there was a dramatic response

after medication.

However, a hearer would infer a different degree of type of speaker-commitment in the two cases. The explanation for this difference can be found in the interaction of two Gricean maxims, the Maxim of Quality and the Maxim of Quantity (Grice 1975), cited in 16:

(16)a. Grice's Maxim of Quality:

Try to make your contribution one that is true.

- i. Do not say what you believe to be false.
- ii. Do not say that for which you lack adequate evidence.

b. Grice's Maxim of Quantity:

- i. Make your contribution as informative as is required (for the purposes of the exchange).
- ii. Do not make your contribution more informative than is required.

The analysis is as follows: In the unmarked case, e.g. 15a, by simple invocation of part i of the Maxim of Quality, the hearer infers that the speaker does not believe that the proposition conveyed is false, and, by simple invocation of part ii of that Maxim, that the speaker has adequate evidence for believing it to be true. Sentence 15a, therefore, is in some sense equivalent to the redundant 15c. In 15b, however, the proposition conveyed is the same but additional linguistic material is given, according to Dr. Smith. By the Maxim of Quantity, the hearer infers that the speaker is not intending to convey according to Dr. Smith and to me, since Dr. Smith's commitment is not required for the purposes of the exchange. S/he therefore infers according to

Dr. Smith and not necessarily to me, the implicature being that the speaker is not following part ii of the Maxim of Quality but that, were Dr. Smith speaking, s/he would be following it, i.e. Dr. Smith has adequate evidence for believing it to be true. This suggests that we are dealing with a scalar phenomenon (see Horn 1972), where the speaker is at or near the top of the scale and others are ranked lower along the scale. Note that this accounts for the occurrence of at least in 13c: the speaker cannot operate at the top of the speaker-commitment scale in accordance with the Maxim of Quality but can, at least, report that a particular other could. Thus far, however, we have argued that Attribution Shields implicate that the speaker is not following part ii of the Maxim of Quality but we have not determined what his/her own commitment is, if any, to the truth of the proposition. In the corpus, it turns out that there is always some commitment in that the speaker always does follow the first part of the Maxim of Quality--that is, does not utter something like 15b when it is the case that s/he knows 15a to be false. To ascertain what the actual level of commitment is, however, one must take into account the attributee, e.g. Dr. Smith, in particular at what relative point along the scale the attributee is ranked by the coparticipants. In the corpus, physicians generally rank higher than nurses and nurses generally rank higher than parents. In addition, some physicians rank higher than others, and possibly the credibility of the nurses is likewise ordered. For example, in 13, only the propositions in 13b and 13c are never contested or questioned. The hedged proposition in 13d is implicitly contradicted later on, the one in 13e is

completely ignored as the coparticipants continue to search for reasons for the child's weight loss, and the one in 13a is explicitly questioned, as shown in 17:

(17) Uh, the other way to put it together [...] is that: um he did suffer an anoxic insult, uh when his mother was resuscitating him and it wasn't quite as quick as she thought, and that what we're seeing now are seizures uh um...following the anoxic insult. (A.II.298)

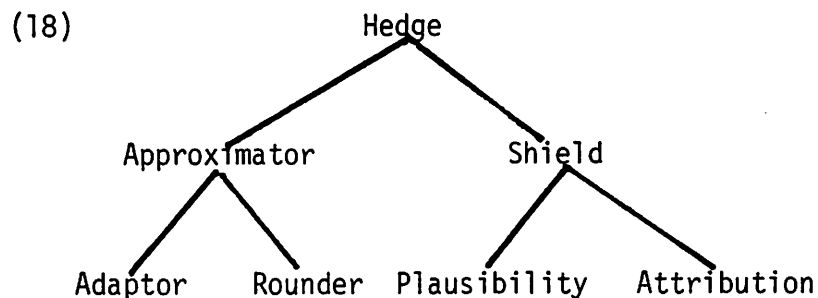
In the case of Attribution Shields, then, it is even more obvious than in the case of Plausibility Shields that coparticipants make use of contextual features, in particular, hypotheses about one another's beliefs, here beliefs about other individuals' credibility, when inferring the degree of commitment that the speaker wishes to assume, and thus no neat assignment of numerical weights to particular morphemes or strings thereof, as advocated in Bryant and Norman 1979, is possible. *

In terms of distribution, Attribution Shields predominate in the relating of background information, including the cause of hospitalization (13a,b), but may of course also occur in other domains as well, since all possible types of information may be reported to the coparticipants and then asserted under an Attribution Shield.

3.3. Summary of hedge-types. sum

So far, we have tried to show that this corpus reveals that there are different types of hedges: (A)Approximators, which affect

the propositional content, either by adapting a term to a nonprototypical situation, or by indicating that some term is a rounded-off representation of some figure, and (B)Shields, which affect the degree and type of speaker-commitment that is inferred, by implicating that the speaker is uncertain because s/he speaks from knowledge or beliefs acquired via plausible reasoning or that s/he has no direct knowledge but is attributing the belief to a particular other. The taxonomy is illustrated in 18:



4. Self-repairs and hedging.

Thus far, we have looked at the occurrence and distribution of various types of hedges in the corpus. However, if we were to hypothesize that uncertainty represents a problem-area for the coparticipants and that the frequency of hedges supports this hypothesis, one might well argue that that has not been shown and that the high frequency of hedges reflects merely a tendency toward certain types of clichés, that expressions like I think or sort of are simply hackneyed phrases in the colloquial language and do not signify anything beyond that. It turns out that there is some evidence with which to counter such an argument, involving the interaction of hedging and self-repairs in the corpus.

We take the notion 'self-repair' from Schegloff, Jefferson, and Sacks 1977, where it is discussed in detail although not defined. For this analysis, we consider a self-repair to have taken place when the speaker breaks off before completing a well-formed sentence, using characteristic repair intonation, transcribed here with a dash (see Labov 1966, 1970), and then continues, the continuation or a part thereof grammatically and/or semantically matching the unfinished sentence or a part thereof. Consider 19:

- (19)a. I saw John-- John yesterday.
- b. I saw him-- John yesterday.
- c. I saw John-- I saw Mary yesterday.
- d. I saw John-- Mary yesterday.
- e. John brought his son-- his infant son to work.
- f. John left-- Sue told me that John left early.

Some self-repairs involve mere repetition, e.g. 19a. We shall call these nonsubstantive self-repairs. Among the others, which we shall call substantive self-repairs, some involve the replacement of a word or phrase, e.g. 19b, where an alternative referring expression for the same referent is substituted, and 19c,d, where a new referent is substituted, while others involve the addition of material, e.g. 19e, where the modifier infant is added, and 19f, where the higher clause Sue told me that is added. Henceforth, we shall ignore all nonsubstantive self-repairs and consider only substantive ones, which, for ease of exposition, we shall refer to simply as 'self-repairs'.

As is typical of spontaneous spoken language, self-repairs are fairly frequent in this corpus of physician-physician discourse. In

one unexceptional two-hour session, for example, there are 97 clear cases, for an average of one self-repair every 84 seconds. To return now to the matter of hedging, if we hypothesize that uncertainty is a problem-area for the coparticipants, one that is a continuous and ongoing concern, we might then predict that a substantial percentage of total self-repairs involve the addition of hedges. In fact, it turns out that 38 of the self-repairs, or 39%, involve the addition of hedges. The figures, with a breakdown for hedge-type, are presented in 20:

(20)	<u>SRs adding hedge</u>	<u>Other SRs</u>
	N = 38 (39%)	N = 59 (61%)
Adding Adaptor:	7 (18%)	
Rounder:	0 (0%)	
Plaus. Shield:	19 (50%)	
Attrib. Shield:	12 (32%)	

Second, recall that one type of hedge, the Rounders, do not reflect any uncertainty or fuzziness but are rather a shorthand device when exact figures, though existing, are not relevant or available. We would thus predict that Rounders would not figure significantly in the self-repairs that add hedges. In fact, none occur. (However, the total figures are too small for us to determine at this point whether this nonoccurrence is significant.)

Third, a distinction may be drawn between two types of speech acts, questions and assertions. If hedges occur simply as clichés, they should occur equally in both types of speech acts. If, however, they reflect the speaker's real concern about his/her commitment to a

certain belief, we would expect the self-repairs adding hedges to take place in assertions rather than in questions. In fact, most do, as shown in 21:

(21)	<u>SRs adding hedge</u>	<u>Other SRs</u>	
Questions:	2 (5%)	10 (17%)	
Assertions:	<u>36 (95%)</u>	<u>49 (83%)</u>	($p < .1$)
Total:	38 (100%)	59 (100%)	

Finally, an examination of all occurrences of hedges in the corpus, in self-repairs and not, reveals that Shields occur significantly more often in self-repairs than do Approximators, which correlates with their function of indicating a marked speaker-commitment. The figures are presented in 22:

(22)	<u>In SRs</u>	<u>Not in SRs</u>	<u>Total</u>
Shields:	31 (10%)	279 (90%)	310 (100%)
Approximators:	7 (4%)	175 (96%)	182 (100%)

($p < .02$)

What was not clearly predictable, however, is that Attribution Shields occur significantly more frequently than any other type of hedge, with no significant difference in the occurrence between any two of the remaining three types. The figures are presented in 23:

(23)	<u>In SRs</u>	<u>Not in SRs</u>	<u>Total</u>
Attr. Shields:	12 (21%)	46 (79%)	58 (100%)
a. Rounders:	∅ (0%)	24 (100%)	24 (100%) ($p < .02$)
b. Plaus. Shields:	19 (8%)	233 (92%)	252 (100%) ($p < .01$)
c. Adaptors:	7 (4%)	151 (96%)	158 (100%) ($p < .001$)

Comparison of Attribution Shields with each of the other three.

This suggests very strongly that a major source of dysfluency in the corpus is the felt need on the part of the coparticipants to hedge some proposition/belief that they have already begun to utter in an unhedged (or less hedged) form, in particular, to implicitly disclaim personal commitment by explicitly attributing the belief to another.

5. Conclusion.

In this paper, we have looked at a corpus of physician-physician discourse and we have tried to show that there are different types of hedges and that certain types are a linguistic reflex of speaker-uncertainty, or, more precisely, of a marked commitment on the part of the speaker to the truth of the proposition that s/he is conveying. It is easy to infer from this that such hedging is peculiar to the discourse of physicians. However, we intend no such implicature, since we have no analogous data from the discourse of other professionals engaged in work-related discourse, and it may well be the case that, if we did, we would find that physicians hedge no more than lawyers or linguists or any other group of individuals whose field is still somewhat murky and who have a large stake in saving their professional face.³ What we do think might be peculiar to physicians, however, is that the uncertainty underlying the hedging constitutes a problem for them in that their self-expectations may be violated, contributing to frustration, depression, and/or anxiety. A relevant factor may well be that physicians, far more than other professionals, interact regularly with a lay public which tends to regard them as omniscient, and omniscient in areas of life-or-death importance.⁴

The solution, then, for the ICU staff under discussion here may be not that they should try to be more 'precise' in their utterances but rather that they should try to understand that their fairly frequent reliance on other individuals' beliefs and their use of plausible reasoning are in the best tradition of scientific inquiry and rational thought and that their marking of such activities by hedges in fact demonstrates a scholarly orderliness in their representation of knowledge.

Notes

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¹In a similar vein, Tannen 1980 reports an unsuccessful dialogue between a pediatrician and a parent about the color of the patient at birth. The physician's relevant lexicon includes the terms yellow and white but, apparently, not pale, the latter being the parent's favored term.

²In fact, since Shields mark a certain 'fuzziness' in the level of speaker-commitment, their replacement by numerical ratings would probably serve only to give the physicians one more thing to be uncertain about and, ironically, to hedge.

³Roger Shuy informs us (personal communication) that he has noticed a high degree of hedging in pretrial lawyer-lawyer discourse and that the hedging gradually disappears as the lawyers get closer to the courtroom situation.

⁴In this regard, and analogous to the situation described in note 3, it is interesting that, in a study of physician-patient discourse, Sakiko Akita reports very few hedges in the physicians' speech. (Personal communication from John Hinds.)

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