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Linguistic Consequences of Complex Social Structures: Rank and Task in Police Helicopter Discourse

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1. Motivation

The purpose of this paper is to show that there are complex social structures, involving moment-to-moment negotiations of the speakers' and addressees' positions, which have strong effects on the linguistic structures used by the participants. Previous studies in sociolinguistics and pragmatics have shown that speakers can mark distinctions of social hierarchy in a variety of ways including choice of pronouns and terms of reference, phonological and morphological variations, and a wide array of politeness forms, including mitigation, indirection, and explicit politeness markers. It has become increasingly clear that sociolinguistics and pragmatics must include an account of how social distinctions are negotiated and manipulated by the participants' use of language. However, thus far, the model of social structure used in most linguistic studies has been quite impoverished: a simple hierarchical model, usually defined by a few simple economic, or socio-economic categories. While studies using this model demonstrate the predictable effects of such categories, they do not do justice to the complex types of social organization which can find expression in speakers' language use. It is necessary to consider more complex cases and more complex models, in order to take seriously the "socio" aspect of sociolinguistics.

Recently, there have been a number of criticisms of sociolinguistics' simple model of social class, which argue that social class as defined by a small number of economic variables is an analyst's category, not a member's category, and does not correspond to the actual experience or judgment criteria of the subjects whose world is being described, especially given the American mythology of a classless society. For example, Milroy (1980) describes social stratification in Northern Ireland in terms of degree of membership in local networks, a description far more precise and fine-grained than simple class membership. Eckert (1987; in press), examines the social stratification of adolescents, for whom class is not an immediately relevant category, since their class status can only be assumed to be that of their parents. Rather, it is peer group membership, which expresses adolescents' immediate social status and partially predicts their adult status, as well as strongly predicting their linguistic behavior.

However, one aspect of social structure which is rarely considered by sociolinguistics is fluctuation and negotiation of

authority in the immediate interactional situation. Such local fluctuations have been examined in code-switching studies, such as Blom and Gumperz (1972) and Poplack (1981), which show that factors such as topic, key or seriousness of the situation, ethnic identity and choice of multiple roles, can all have effects on language choice. However, such fine-grained analyses have not been available for single language situations.

An initial attempt at such an analysis has been given by Linde et al (1987), which considers the linguistic effects of contradictions between permanent rank and task status in a commercial aviation simulation. Rank refers to the permanent chain of command consisting of the captain, the first officer, and the second officer. Task status refers to who is flying the airplane at a given moment and who is acting as copilot; either of these tasks may be done either by the captain or the first officer, both of whom are trained as pilots. The two hierarchies are parallel when the captain is the pilot flying; the command is thus unambiguously located in a single person. The hierarchies may be crossed, though, when the first officer is the pilot flying: since the pilot flying has the situational right to issue orders, while the overall responsibility for the flight remains with the captain. In the crossed hierarchy condition, speakers mark the social situation by the distinctive patterns of use of terms of address, and level of mitigation and speech act indirectness.

2. The Present Study: The Research Site and Data

The present study uses as data audio and video recordings obtained inflight during two weeks of operation of an airborne law enforcement agency. The aircraft is a Bell Long Ranger helicopter, which carries a flight crew of two: a pilot, who is the aircraft commander, and a flight officer, who is the mission commander. Pilots are generally former military pilots, who have received police training. Flight officers are police officers who have received paramedic training, but are not trained as pilots. Note that unlike most military and commercial aviation operations, this situation involves two parallel hierarchies, rather than a single hierarchy. The pilot is responsible for all decisions include operation of the aircraft, and aircraft safety. The flight officer is in charge of the actual police mission. Typical missions include search and rescue, emergency medical services, suspect pursuit, fire spotting, transportation of personnel to crime or disaster sites, etc.

Several weeks of day and night operations were recorded using a stationary-mount video camera focused on the crew members and cockpit panel. In addition, a voice recording system recorded both internal and external communications directly from the officers' communication lines, although only internal

communications are analyzed in this study. In addition, subjective ratings and physiological measures were taken, to evaluate the effects of stress and workload on crewmembers.

This research site is of interest for a number of reasons. One is that although there are only two participants during each flight, the social structure is quite complex, and changes from moment to moment, depending on the nature of the task in focus. This provides an important contrast to situations previously investigated, such as commercial aviation crews. These crews have a much simpler, traditionally hierarchical structure. Additionally, the current situation provides a valuable site for the study of task demands on linguistic structure, since the task demands vary widely in nature, predictability, and difficulty, ranging from extremely high to low enough so that long periods of free conversation are possible.

This paper is a pilot study, which describes an analysis of two of the 16 missions filmed. In the first mission, Flight 6, the day shift crew members came on duty for an emergency call at 2:00 a.m. and remained on call at headquarters. The mission investigated in this study began at 12:33 p.m. with a request by another facility to assist with a pursuit of a stolen vehicle, whose driver or passenger had fired shots at an officer. The vehicle crashed and burned, causing a grass fire, and the suspects had escaped on foot. The helicopter mission, which lasted until 2:04 p.m., was to assist with a search for the suspects in a heavily forested area.

The second mission, Flight 8, was also a day shift mission, lasting from 1:05 to 1:37 p.m. The crew members had had an undisturbed night, and had flown one mission previously during that shift, that last from 8:40 to 11:30 a.m.. The second mission was a response to a robbery of a VCR with a concealed micro-transmitter. The helicopter mission was to track the signal of the micro-transmitter, find the car with a path that matched the signal, establish the location of the car, and direct ground units to the car.

3. Linguistic Variables

The major linguistic variable investigated in this study is **mitigation**, as defined by Labov and Fanshel (1977): those linguistic devices which serve to make an utterance less direct, more polite, and less likely to cause offense. In the following examples, the two participants are identified as Pilot and First Officer.

High Mitigation

1. P: Say I would get a map out Dave. Of this area.

2. FO: Well you want to widen out just a little bit.
3. [FO: Why don't we go uh
P: Out to that creek?]
F: Yeah I was going to say out maybe to the creek or even kind of the, not the, the bridge line, but up in there a little ways, maybe kind of work back.

Low Mitigation

4. P: OK did they have a vehicle description?
5. FO: You don't follow the light then?
6. P: That's a good reading now. When you get a constant?
7. FO: I wonder if they have canine units up here.

Direct

8. P: Direct that unit toward the gold car.
9. FO: Does it always bounce around like that?

As these examples show, there are many linguistic devices which function as mitigators: questions are more mitigating than imperatives; modal auxiliaries are more mitigating than simple verb forms; past tense forms where a present tense could be used are mitigating. This list could be continued almost indefinitely. A theory of why so many and such heterogeneous devices should all serve a similar social function has been given by Brown and Levinson (1979). This account is based on the notion that politeness is the attempt to avoid **face threatening action**, where **face** is the public self-image that every member of the culture wants to claim for him/herself. There are two types of face, negative and positive. **Negative face** is "the basic claim to territories, personal reserves, rights to non-distraction -- i.e. to freedom of action and freedom from imposition." **Positive face** is the "positive consistent self-image or 'personality' (crucially including the desire that this self-image be appreciated and approved of) claimed by interactants." (p. 66) These two types of face give rise to two types of politeness, also called negative and positive. **Negative politeness** attempts to minimize the degree of trespass to the addressee's autonomy; **positive politeness** attempts to minimize the distance between speaker and addressee, so that the speaker's and addressee's desires appear to be the same.

In order to subject the use of mitigation to a quantitative

analysis, it is necessary to devise a scale to quantify degrees of mitigation. We use a four-point scale: Aggravated, Direct, Low Mitigated, and High Mitigated. Direct utterances are assigned a value of 0, low mitigated utterances a value of 1, high mitigated utterances a value of 2, and aggravated utterances, (which are not present in this data), a value of -1. This scale has been empirically validated as conforming to the intuitions of the aviation community. That is, a reliability study was conducted, comparing sample utterance ratings of professionals to ratings by the investigators, and found that the two sets of ratings were correlated at an 80% level. This study is described more fully in Linde and Goguen (1983).

Although Linde et al (1987) showed that the use of names and terms of address is particularly sensitive to shifts in authority structure in a commercial aviation situation, this variable is not considered in the present study. We found that names and terms of address are very little used in the police helicopter situation, since there are only two crew members. Therefore, there is no ambiguity of address; when a speaker begins an utterance on the intercom, there is only one potential addressee. Similarly, there are no uses at all of terms of address like "Sir," "Captain," "Boss," etc, in strong contrast to the usage of the commercial aviation crews.

4. Findings

We found that both social hierarchy and task structure have an effect on linguistic structure. Let us begin with social hierarchy, since this is a more familiar variable in sociolinguistic studies.

4.1 Effects of Hierarchy

In order to consider the effects of social hierarchy, we must first determine what the hierarchy is in this situation. Officially, the two-man crew consists of two equals, both policemen, who both hold the rank of officer. The pilot is the aircraft commander, responsible for the safe operation of the mission. The flight officer is the mission commander, responsible for the completion of the police mission. This should, and in some respects does, mean that there are two hierarchies of command, either one of which may become salient depending on the demands of the moment. That is, piloting the aircraft or executing the police mission may be driving the crew's behavior at any moment.

However, in practice, there are a number of types of evidence which show that the pilot tends to be treated as the commander, and the flight officer as the subordinate. Perhaps

most importantly, while both crew members are paid more than ground-based officers, the pilot's supplement is higher. Thus, the pilot receives additional skill pay of 17% of his base salary, while the flight officer receives 5%. This is important evidence, since in American society it is axiomatic that rank, importance, and pay co-vary.

Another indicator that the two positions are not equal is the nature and direction of teasing and banter. In this social situation, teasing and banter are quite frequent, particularly because crewmembers can spend a great deal of time together at headquarters, waiting to be called out on a flight. A study was conducted of teasing, in which I wrote down all instances of teasing I heard during the second half of the study. (Note that the presence of an investigator, particularly a female investigator, is likely to have had an influence on the type of language used in teasing, and on the subjects of teasing.) I found that in this situation, teasing is almost always initiated by the superior. The subordinate may then tease back, but does not initiate a teasing round. This claim may appear to be circular, since the relative ranking of the pilot and the flight officer is the point at issue. However, the situation is clear in cases in which the sergeant is present, since he is officially the superior of everyone else present. It is always the sergeant who initiates any teasing round in which he is involved. Since we also see that in a teasing round between pilots and flight officers, it is the pilots who initiate the teasing, we may conclude that this is another sign of their rank relative to the flight officers. Some examples are given below.

10. [FO is putting creamer in coffee, Sergeant is watching]
 S Why don't you drink your coffee like a man?
 FO How about just chewing on some coffee beans?
11. [Pilot and FO are discussing Vitalogs. P is wearing it in his leg pocket, with wires coming out the fly end of the zipper, FO is wearing it in his breast pocket, with wires coming out of the top end of the zipper.]
 P -> FO: You look ridiculous.
 FO -> P: You look [Points, laughs]

An additional observation about the direction of teasing which supports the observation that the pilot is taken as the superior is that while flight officers are teased about poor performance of their jobs, we have not observed pilots teased this way. While it is understandable that flight officers would not care to question, even in jest, the competence of the pilots with whom they fly, this taboo itself creates a ranking of the two positions.

A further type of social evidence for the higher rank of the

pilot is that pilots tend to make decisions for both parties. A common type of decision comes in the situation in which there have been no calls for the crew members. They have the right to decide to go out on patrol, which they may do if they have not yet flown a sufficient number of hours on their shift. The question about this decision is always initiated by the pilot, and we have not seen any instances of flight officers refusing this suggestion.

Finally, we may note the interaction of the two crew members in terms of conversational management. During periods with a high workload, of course, the conversation is managed essentially by the demands of the task. This often includes, most saliently, near-continuous transmissions by both crew members on a number of radio frequencies. However, during periods when the workload is lower, for example, when the mission is completed, during the return flight to base, non-operationally relevant, social conversation does happen. Such conversation is not continuous; it is sporadic, interrupted both by radio transmissions, and by interspersed periods of silence. One common way to start conversations in this situation is to use "noticings", a form of conversational opening in which one party draws the attention of the other to some feature of the landscape as a potential conversational topic. An example of such a noticing, which follows several minutes of silence, is given in (12).

12. FO: This reservoir or lake or whatever looks pretty full, huh?
 P: Yep

Noticings and initiations of non-operationally relevant new topics are more frequently initiated by the pilot than by the flight officer, as shown in Table 1. (Note that the sample size is too small for a statistical analysis, but the difference is in the expected direction.)

Table 1: Initiation of Noticings and New Topics

	<u>Pilot</u>	<u>Flight Officer</u>
Flight 8	3	1
Flight 6	15	8
Total	18	9

There is an operational explanation for this difference: although the police mission may be completed, the pilot still has the responsibility for safe operation of the aircraft as they return to base. Therefore, he can decide, more easily than can the flight officer, whether conversation is safe or desirable at

any moment. This fact, though, tends to give additional authority to the pilot; not only does he control the aircraft, he may control the intra-cockpit interaction as well.

4.1.2. Linguistic Consequences of Social Hierarchy

Previous work [Goguen and Linde 1983, Linde et al 1987] on mitigation in an aviation context suggests that mitigation follows the chain of command: there is more mitigation up the chain of command than down it. This appears to be the pattern found for most of the law enforcement flights of this project; however, one of the flights examined in detail for this study presents an exception to this pattern. because of the unusual nature of the task situation. The data shown in Table 2 indicate the pattern of mitigation we would expect, both from previous studies, and from initial examination of all the flights of this study.

Table 2: Mitigation Scores by Crew Member, Flight 6

	<u>D</u>	<u>LM</u>	<u>HM</u>	<u>Mitigation Score</u>
Pilot	12	11	0	.47
Flight Officer	15	17	4	.62

In contrast, Table 3 shows the mitigation scores for the two crewmembers during Flight 8, the exceptional flight. Here the pilot actually shows a higher mitigation score than the flight officer. We can find the reason for this surprising reversal in the fact that the flight officer is not current in his knowledge of the operation of the tracking device, which is necessary for his task of locating the suspect's car. Therefore, the pilot, who is familiar with the device, must instruct him in his own task. This situation, which is potentially extremely face-threatening, is handled by the pilot's unusually high rate of mitigation.²

Table 3: Mitigation Scores by Crew Member, Flight 8

	<u>D</u>	<u>LM</u>	<u>HM</u>	<u>Mitigation Score</u>
Pilot	16	10	2	.5
Flight Officer	16	9	1	.42

4.2 Task Structure

Because of the complex nature of the authority hierarchy, the task structure is an extremely interesting variable. As discussed above, there are two parallel authority structures, defined by the task demands of the moment. The pilot is the aircraft commander, while the flight officer is the mission commander, and at any moment, the demands of one of these aspects of the total mission may predominate. Therefore, at any given time, a crew member may need to make a request of the other -- either to perform some action, or to ascertain or transmit some information. A request may be categorized by its task membership -- an action needed for the performance of the speaker's task, or for the performance of the addressee's. As we shall see, these have a very different social status, depending on whether one crewmember is telling the other how to do his own task, or requesting some action which he himself needs for his performance.

In the present investigation, we consider all requests, including requests for action, and requests for information. Requests for information may be, indirectly, requests for action, if the addressee does not have the requested information, and must perform an action to obtain it. We may further subdivide requests into requests pertaining to the speaker's primary responsibility, those pertaining to the addressee's primary responsibility, those pertaining to mutual responsibilities, that is, responsibilities of the entire mission, and those pertaining to no responsibility, that is, requests involving non-operationally relevant topics. We find that crew members are extremely sensitive to the nature of task demands: requests involving the speaker's own mission tend to be quite direct, while those involving the addressee's mission, tend to be significantly more indirect. This finding is quite understandable: requesting someone to perform his own task is potentially more face-threatening than requesting him to perform some action needed for one's own task. Table 4 shows the comparison between speaker-oriented requests and addressee-oriented requests.

Table 4: Mitigation Level By Task Orientation

<u>Task Orientation</u>	Direct	<u>Low Mitigation</u>	<u>High Mitigation</u>	<u>Mitigation Score</u>
Speaker	12	7	1	.45
Addressee	15	17	5	.72

(Chi square = 4.49, df 1, p = .034)

These results suggest that speakers' language is not wholly predictable by their position in a long-term social hierarchy. Rather, we see that momentary changes in their relation to one another, dictated by changes in the task situation, also affect their linguistic choices.

5. Conclusions

These results show the need for a more sophisticated notion of authority structure in sociolinguistics and pragmatics, one which can model the complex situations found in ordinary life, and can reflect the kinds of moment to moment status shifts and status negotiations which participants are clearly capable of making.

Notes

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2. Note that because at present only two flights have been analyzed in detail, we can not rule out the possibility that the differences represent individual differences in the linguistic styles of the crew members rather than systematic responses to the social situation. Further investigation will decide this question. However, since the results are in the directions predicted by previous research, it is expected that individual differences will not, in fact, be shown to be the determining factor.

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