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VOLUME 2

“DISCOURSE AND GRAMMAR”

EDITED BY SANDRA A. THOMPSON

1988

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CONTENTS

John W. DU BOIS, Susanna CUMMING, and Stephan SCHUETZE-COBURN Discourse Transcription	1
Cecilia E. FORD Variation in the Intonation and Punctuation of Different Adverbial Clause Types in Spoken and Written English	73
Abigail KAUN Definite and Indefinite Noun Phrases in Turkish: A Discourse Study	97
Tsuyoshi ONO <u>Te</u> , <u>I</u> , and <u>Ru</u> Clauses in Japanese Tofu Recipes: A Quantitative Study	109
Janine SCANCARELLI Marking Discontinuity in Pima and O'odham (Papago)	129
Sandra A. THOMPSON Information Flow and 'Dative Shift' in English Discourse	147
Sandra A. THOMPSON and Anthony MULAC A Quantitative Perspective on the Grammaticization of Evidential Parentheticals in English	165

Department of Linguistics
University of California, Santa Barbara
Fall, 1988

Comments welcome

DISCOURSE TRANSCRIPTION

John W. Du Bois
Susanna Cumming
Stephan Schuetze-Coburn

University of California, Santa Barbara

December 1, 1988

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TABLE OF CONTENTS

CHAPTER 1. INTRODUCTION	3
1.1 Foreword	3
1.2 Background of the present system	6
1.3 Some transcription design principles	7
1.4 How to use this document	9
CHAPTER 2. TRANSCRIBING CONVENTIONS	10
2.1 Pause and prosody	10
2.2 Intonation contour	15
2.3 Marked quality or prosody	20
2.4 Segmental phonetic detail	23
2.5 Nonverbal vocal sounds	25
2.6 Filled pause and backchannel	29
2.7 Transcriber's perspective	30
2.8 Turns and overlap	33
2.9 Miscellaneous	37
2.10 Prosodic units	37
2.11 Capitalization	40
2.12 False start	41
2.13 Reserved symbols	42
CHAPTER 3. THE TRANSCRIBING PROCESS	44
3.1 Where to begin	44
3.2 Outline of transcribing procedures	45
3.3 Conclusion	51
CHAPTER 4. GATHERING INFORMATION ABOUT THE SPEECH EVENT	53
4.1 Information sheets	53
4.2 File header	54
APPENDIX 1: INFORMATION SHEETS	56
QUICK SHEET	57
SPEAKER SHEET	58
TAPE LOG	59
TRANSCRIPTION SHEET	60
TRANSCRIBING PROCEDURE CHECKLIST	61
APPENDIX 2: HEADER FOR TRANSCRIPTION FILES	62
NOTES	63
REFERENCES	69
INDEX OF TRANSCRIPTION SYMBOLS	71

CHAPTER 1. INTRODUCTION

1.1 Foreword.

With the rapid rise of interest in discourse in recent years, the importance of methods for dealing with spoken data has increased.¹ Central to the modern study of spoken discourse is the problem of transcription.

Discourse transcription can be defined as the process of making a written record of a speech event, in such a way as to enable research into the nature of discourse. Discourse transcription thus encompasses a wide variety of approaches, each of which reflects a particular set of insights into the nature of discourse, as well as a set of views about what in it is important enough to write down and study. Virtually all approaches to spoken discourse make reference to one or another of the more subtle aspects of speech, which may include pause, pitch, stress, laughter, breathing, prosodic units, speech overlap, and other characteristics. Whether such features are seen as relating to the interlocutors' negotiation of the ongoing conversational interaction, to the cognitive foundations of the speaker's verbalization process, or to some combination of these and other factors, they do need to be attended to. The transcriber must learn to listen for, classify, interpret, and notate the discourse features that are deemed significant.

In the past the assumption has sometimes been made that learners can just pick up transcribing by listening to tapes and writing down what they hear. But as discourse researchers have become increasingly aware of the large significance of small cues in speech, and have begun to demand transcriptions which faithfully represent these cues, the need for a more sophisticated and systematic approach has become evident. If discourse researchers are to enjoy data records worthy of intensive analysis, the transcribing process must produce transcriptions which are at once richly informative, consistent, and reliable. This bespeaks a need for guidance for new transcribers, which can be addressed in part through written materials like the present handbook, if their reading is conjoined with a great deal of listening, transcribing, and discussing.

What follows, then, is a description of one way to do transcribe spoken discourse. While a few of the conventions are specialized in application, most of the transcription problems dealt with here are ones that many or all discourse researchers must confront, to the extent that they concern themselves with (among other things) the substantive details of spoken language in use. We hope that this document will be of interest to all who make or interpret transcriptions of spoken discourse, whether of English or any other language. Many of the techniques

presented below should be useful both to beginning students of transcription and to advanced discourse researchers. It should be emphasized at the outset that one need not subscribe to all of the categories and conventions presented here in order to derive benefit from this document. Even those who are already using, or expect to use, another set of transcription conventions should be able to gain something from our discussion of common discourse problems, and from the explication of one approach to such problems.

We offer here a set of techniques and conventions which have proved useful over the years. The system that we have arrived at is one which distills, and occasionally augments, elements from a variety of current approaches to transcribing spoken discourse, accommodating to the special technical requirements of computer text manipulation -- and always with an eye on certain overarching questions regarding form and function of contextualized language in use. The design of the system has naturally been shaped by our overall perspective on discourse, and informed by our long-range goal of understanding the relationship between discourse, grammar, and context. In seeking to apprehend the functioning of contextualized language in use, we are concerned to attend particularly to the role of linguistic form, constituted in substantive details ranging from pause to prosody to discourse unit structure.

We take the view that the goal of discourse transcription is to document, for a given speech event (as mediated through an audio or video record),² those aspects which carry functional significance to the participants -- whether these are linguistic, paralinguistic, or nonlinguistic. The task is not, as some might conclude, to produce a record of all the acoustic or motor (physical) events represented on a tape. We seek to record what is significant to users of language,³ and for this we must draw on our knowledge of the language that we are transcribing, as well as the culture that goes with it. A pure acoustic record is not sought: for that we have sound spectrograms, yet we have long since learned that they do not of themselves tell us what we need to know. The acoustic experience must be interpreted, within a framework of linguistic knowledge -- which knowledge encompasses, to be sure, much more than the narrowly linguistic categories of traditional phonology, morphology, syntax, and semantics. The phenomena which we notate, while they do not always display a one-to-one correspondence to neatly bounded functional categories, at least seem to constitute some portion or aspect of what the interlocutors attend to, and take account of, in arriving at their functional understanding of the ongoing spoken interaction.

At this early stage in the history of spoken discourse studies, of course, the question is certainly not settled as to just which cues have functional significance, and thus merit

transcription. Moreover, from a practical point of view, one must be selective in what one attends to. A great deal of effort goes into serious discourse transcription, which makes it especially important to keep in view what kind of research questions one expects to ask, once one's labors have come to fruition in the form of a viable transcription. One must weigh the time and effort spent in transcribing against the likelihood that one is going to use the information transcribed. To decide this potentially circular question (how do you know you won't need the information if you don't record it?), one must draw on pilot studies, intuition, and past research experience, as informed by individual orientation toward research goals.

To cite one example: a major feature of the transcriptions described below is the division of the text into intonation units, that is, identification of boundaries between intonation units. The effort involved is motivated by our view that intonation units are fundamental units of discourse production (Chafe 1980a); and, moreover, by our consequent intention to frame key research questions in terms of these units (Du Bois 1987, etc.). We have found intonation units to be so crucial for understanding the main questions about discourse production that we would be hesitant to use transcriptions lacking them for such research. On the other hand, for some researchers an elaborate classification of point-by-point pitch movements, and of the multitudinous shapes of resulting intonation contours (which is somewhat sidestepped in the present system: contrast Svartvik and Quirk (1979) with §2.2 below), will be crucial to questions they intend to address, and will thus motivate the additional effort required to (reliably) bring off such intonational detail. For still others, a richer interpretation of turn-taking cues will be crucial to an understanding of the social interactional aspects of conversation.

One might conclude that all transcriptions, or at least those intended for public dissemination, should include all of the above mentioned features. Yet to attempt to write everything (whatever that would be) just in case someone might need it some day is perhaps too altruistic. Deciding what to transcribe, and what not to transcribe, is important not only for economizing effort, but also for focusing on fruitful research questions and the means required to answer them. This is the reason, we believe, that there will always be more than one way to transcribe discourse: any transcription system will reflect its users' goals (Ochs 1979).

That said, it is nonetheless possible to create a system which is general enough, and flexible enough, to accommodate the needs of a wide range of users who share at least a broadly similar orientation. We have sought to present a system which, in addition to dealing effectively with those phenomena which are currently of interest to us, can be expanded to meet both our own

and other researchers' future needs. To this end, some of the symbol conventions introduced below have been made open-ended (e.g. angle brackets, §2.3), and several symbols have been reserved for definition by individual users (§2.13.4).

1.2 Background of the present system.

The present approach to discourse transcription naturally draws substantially from the work of others: useful elements of theory and research technique have come from teachers, colleagues, and students. While there are many people who have contributed in this way, the influences of which we are most aware are Chafe (1979, 1980a, 1980b, 1987, forthcoming), McQuown (1967), Ochs (1979), and the conversation analysts (Sacks, Schegloff, Jefferson, et al.; cf. Schenkein 1978, Atkinson and Heritage 1984). Our close attention to the crucial significance of pauses as clues to the process of discourse production, and to the intonation unit as the basic unit of that production process, originates in Chafe's teaching. From the conversation analysis tradition we have tried to borrow at least the basics for attending to turn-taking and related interactional issues. The list of borrowings and sources could go on, of course, and many others will doubtless recognize in this document their own contributions. (For further discussion of related transcription issues, see (in addition to the above sources), Pittenger et al. (1960), Svartvik and Quirk (1979), Edwards (forthcoming), and the references cited therein.)

In some instances we have adopted a transcribing concept along with a symbol to represent it; in others we borrow only the concept. Other things (such as computational convenience) being equal, we have generally tried to keep to existing convention where a widely acknowledged one exists. But in many cases the field of discourse studies presents us with several competing conventions for representing the same phenomenon. Conversely, in several cases a single symbol currently is used with two different meanings. For example, while square brackets [] have a long tradition as indicating boundaries of syntactic units like clauses, in discourse studies the same symbols (or visually similar ones) have a wider currency for indicating the boundaries of overlap between two speakers (deriving from the conversation analysis tradition). In resolving this, we have chosen to use square brackets for speech overlap.⁴ Similarly, colon (:) would be viable as a symbol for prosodic lengthening, except that in many languages it is needed for representing phonemic length -- which must be distinguished in principle, and is distinguishable in practice, from prosodic lengthening (Du Bois 1987:813). In resolving this conflict, we have used the equals sign (=) for prosodic lengthening (§2.1), a notation which derives historically from another early convention, that of two hyphens (--) (Chafe 1980b:301).

In some cases, conventions that are suitable for paper transcriptions become inconvenient once one begins to work with texts in a computer format. Symbols that must occur either inside or attached to a word (with no spaces separating) should preferably be unique so that they can either be stripped out or systematically ignored by any computer program that needs to sort or otherwise recognize specific lexical items. This provides an additional motivation for using the symbol "=" to represent prosodic lengthening, and for using the percent sign (%) to indicate glottal stop (§2.4). On the same account, we find it useful to stick to standard orthography, so that all instances of a word can be found easily (§1.3.2).

For representing speech overlap, the paper-oriented convention of first aligning the two overlapped utterance portions one under the other, and then placing brackets (or bracket-like symbols) directly between the two overlapped lines, becomes very tricky on a computer for reformatting, searching, and so on. The same information can be retained if one simply places a set of brackets within each of the lines that overlap, and then adds numerical indices to allow the overlap alignment to be reconstructed (this is clearer with examples; see §2.8). Admittedly, this way of displaying overlap loses a good deal of the paper convention's immediate transparency to the eye; but for our purposes, this loss is offset by the much greater ease of handling for the computer-user. Needless to say, researchers whose needs differ may prefer different choices.

1.3 Some transcription design principles.

Transcriptions should be easy to read, yet explicit and consistent. It is important for discourse researchers to be able to browse comfortably through a stack of transcriptions, looking (in the literal visual sense) for patterns, perhaps forming hypotheses to be tested later. While transcriptions must contain detailed information, they should not overwhelm the reader's capacity to absorb and organize it. And the detail that they do contain must be represented systematically enough to allow for effective use of the computer as a tool for searching, counting, concordancing, and so on. To address both of these demands -- of clarity and explicitness -- we have adopted a few general transcription design principles which govern all of the symbol conventions presented below.

1.3.1 Speech recognition. The first design principle regards readability. When browsing through a transcription it should be easy to recognize immediately which things on the page represent actual speech and which do not. To this end we write actual speech in normal case, that is, mixed upper and lower case, as in conventional written style. Strings of letters all in capitals, on the other hand, do not represent spoken words. Nonverbal vocal noises are further distinguished by being set off in

parentheses, or written with non-alphabetic characters. Comments or observations inserted by the transcriber are set off in double parentheses (in addition to being written all in capitals).

1.3.2 Normalization. As noted above, standard orthography is used because it allows the computer user to reliably find all instances of whatever word is sought (Edwards 1987, forthcoming).⁶ Adherence to standard spelling of course means that certain kinds of variation cannot be represented directly. A discourse transcription system, as we see it, is neither a phonetic nor a phonemic transcription system: rather, it is oriented principally toward phenomena which have the strongest implications for discourse. Thus, while the present system glosses over certain kinds of segmental phonetic detail, it does represent a certain amount of prosodic detail, which tends to have more significance for the production and structuring of discourse. For some research programs, such as variational sociolinguistics, the details of (variable) pronunciation are so central that texts which contain only lexical normalizations are not viable. But for research programs for which only the occasional word receives a pronunciation of sufficient distinctiveness to warrant special transcription, one can have both normalization and variation: the word is simply written twice, once in normalized fashion (its standard spelling) and again the way it was actually said (in phonetic symbols) (§2.4).

1.3.3 Uniqueness of word-internal symbols. In the present system, a few special symbols do appear within words (see ", ' , and = below), and to this extent the words containing them are not perfectly normalized. But reasonably sophisticated programs for text manipulation⁷ can be told to consistently ignore such symbols when searching, alphabetizing, etc. This works out well, as long as one takes care to ensure that whatever symbols appear word-internally are unique and consistent in meaning. This is the case for the symbol conventions presented in this document.

1.3.4 Units and spaces. It is important for the discourse researcher to be aware of how information is packaged into units, and this applies to the units implicit in the transcription itself, as well as to the units of the speech being transcribed. The most obvious case of a unit that appears in almost any discourse transcription is the word. The word is of course a unit which is recognized by most text-oriented computer programs, where "word" to the computer usually means roughly a string of symbols (not including space) which is bounded by spaces. We have found it useful to be careful in defining the word units of our transcription system in such a way that we can take advantage of the computational capacity to recognize words. Naturally one should not, and need not, become locked into a particular unit analysis just because of the pervasive use of the space character to signify a unit boundary. On the other hand, it would be wasteful not to make this boundary as consistently meaningful as

feasible.

Thus the placement of spaces becomes more than just a stylistic issue. Transcription symbols can be either written as part of a word or as a separate space-delimited entity: the distinction, in the present system, is based on the scope of their application. If a symbol applies specifically to a particular word or part of a word (as when one sound in a word is lengthened, which is symbolized by the equals sign following the lengthened sound), then the symbol is written as part of that word, i.e. with no spaces separating it from the rest of the word (e.g. doo=r). However, if a symbol applies to more than just one word or part of a word, it is written as an independent entity, with surrounding spaces. For example, a punctuation mark such as a comma or a period, which applies to (or has scope over) as much as a whole line rather than just the word it happens to appear next to, is not joined to this word but rather is separated from it by a space (cf. the period in along the 'side .). This departs from ordinary publishing conventions for punctuation marks, of course, but helps one keep track of things computationally.

1.4 How to use this document.

Chapter 2 (the longest chapter) presents a set of transcribing conventions, along with examples for each symbol, and commentary where appropriate. Equipped with a general familiarity with these conventions and guidelines, the discourse investigator may then find it useful to follow the steps outlined in Chapter 3, where specific suggestions are offered on how to get started transcribing and how to proceed step by step. Chapter 4 discusses the kinds of information that should be recorded about the speech event, and about the transcribing procedures that have been carried out. The Appendices are designed to be used as reference sources: for example, they present sample forms for gathering information about the speakers and the speech event, a checklist of transcribing procedures, and so on. Finally, an index is provided to the symbols presented in this handbook.

CHAPTER 2. TRANSCRIBING CONVENTIONS

This chapter presents a set of basic symbols for transcribing spoken discourse, along with comments on how to use them. For each symbol or convention, examples are presented, drawn from transcriptions of natural conversations.⁸ In some cases, we comment on such issues as why the phenomenon in question should be attended to. Where appropriate, we also comment on relevant details of orthographic convention or style such as the placement of spaces. (Unless otherwise noted, the transcription symbols presented below are always to be preceded by a single space and followed by a single space; that is, they are to be separated from surrounding words, and other material, by one space.)

2.1 Pause and prosody.

The placement and timing of pauses in spoken discourse conveys significant information about the speaker's discourse production process and orientation toward the ongoing conversational interaction. Pauses should be indicated explicitly using one of the following three notations. Since the intonational symbols (e.g. comma and single period, §2.2) do not of themselves denote pause, any pause (even a slight one) that occurs in conjunction with an intonation contour must be specifically indicated using one of the pause notations.

By convention, a pause between two intonation units is written together with the unit that follows it rather than with the one that precedes it.

(1) ...(.n) long (timed) pause

This indicates a pause of about 0.7 seconds or longer, for which the approximate duration is indicated, in parentheses, to the nearest tenth of a second (as determined roughly with a stopwatch).⁹ (That is, the duration is indicated as (.7), (.8), (1.2), etc.) (A space precedes the initial period, and a space follows the right parenthesis, but no space appears internal to this character string.)

(1a)

D; ... (3.0) I 'had them 'done at "Pips.
 ...(1.0) You "see it ,

((TRN_CARS))

(1b)

R; ... (HH) 'We 'start 'out ... (.8) with
 ...(.8) 'dead "horse hooves .

((TRN_RANCH))

(1c)
R; ... "This .. is a 'type of 'person ,
...(.9) 'that ...(.7) is 'like ...(.1.0) a 'hermit .
((TRN_RANCH))

(1d)
J; .. when 'I think of "a=ds ,
.. I 'think of | ...(.1.2) 'aesthetics .
((TRN_AESTH))

(1e)
A; ... "down at the= uh ~~
...(.1.2) "reading the 'gau=ge ,
((TRN_FARN))

In some cases, the questions of whether a pause has occurred in a specific place, how long it lasts, and whose pause it is, become subtly and inextricably linked to the interpretation of turn-taking and overlapping between speakers (§3.2, Step 15).

(2) ... medium pause

This indicates a pause which is noticeable, but not very long -- about half a second in duration (0.3 - 0.6 seconds). (A space precedes and follows the string of three periods, but no spaces appear between them.)

(2a)
J; m=hm .
S; ... 'That's what .. the "poet is 'after ,
((TRN_AESTH))

(2b)
S; .. (HH) 'U=m ,
... That's "o=ne 'kind of thing ,
((TRN_AESTH))

(2c)
G; ...(.1.7) I'd 'like to 'have .. my% ... "lungs ,
... my "entire respiratory 'tract ,
... (HH) "replaced ,
... (HH) with .. 'asbestos .
.. or 'something .
((TRN_HYPO))

(3) .. very short pause; tempo lag

This indicates a brief break in speech rhythm: that is, a very short, barely perceptible, pause (about 0.2 seconds or less), or a lag in tempo. The best way to determine whether the two-dot symbol is called for is to imagine a metronome ticking at

the same rate as the speaker is currently producing syllables. A word which lags behind the speaker's rate of syllable production (or lags behind one's mental metronome ticks) exhibits the tempo lag, and should be preceded by two dots. It should be noted that not all instances of the two-dot symbol will correspond to an actual silence, nor are all brief silences to be marked: the moment of silence which necessarily occurs during a lexically or phonologically required glottal stop (or other voiceless stop) is not to be written with two dots. The reason for this is that we are interested in the pause as a functional cue to aspects of discourse production and conversational interaction, not as a raw acoustic fact. (A space precedes and follows the string of two periods, but no space appears between them.)

(3a)

R; ... And 'then ,
 .. they "videotape us ,
 .. 'as we "go .

((TRN_RANCH))

(3b)

R; .. a "reining pattern is ,
 .. a "pattern where you= .. do sliding "sto=ps ,
 .. spi=ns ,
 ... "lead changes ,
 .. I "know you 'probably don't 'know what that 'is .

((TRN_RANCH))

(3c)

D; .. I mean ,
 'I have the 'opportunity ,
 to "talk to people ,
 .. to "get the 'phone book ,

((TRN_CARS))

(3d)

B; ... 'She just .. pulled the 'cat
 | .. and the 'kittens "out ,
 .. and 'pulled off the "bread that was 'dirty ,
 and ,
 ... we "served the 'rest of it .

((TRN_DEPR))

(3e)

J; .. I mean ,
 there are "people that ar=e .. just 'hard to .. "sell
 to .
 S; .. mhm ,
 J; ... and 'hard to "advertise to .

((TRN_AESTH))

(4) = lengthened segment

This indicates that a syllable or segment is lengthened prosodically (to a degree greater than what is expected on the basis of lexical stress patterns). The slight lengthening which is to be expected when a syllable is stressed is not marked with the equals sign (being implicit in the stress marking). Similarly, segments which are phonemically long (in a language with a length contrast for vowels or consonants) do not receive the equals sign notation: they should be written with a different symbol (e.g. colon or doubled letters). Prosodic lengthening is often heard in the final syllable of the intonation unit (especially if the word bears nuclear stress).¹⁰ (The equals sign is written immediately following the lengthened segment; no spaces separate it from the letters of the word it appears in. For phonemes that are represented in standard orthography by a digraph (e.g. in English, ee, ea, oo, ph, ch, tt, etc.), the convention is that the equals sign is written after both letters of the digraph.)

(4a)

K; ...(.7) "Glen's never had a% .. a "co=ld ,
 .. or the "flu= ,
((TRN_HYPO))

(4b)

A; ... The 'thing "about him 'i=s ,
 .. he 'ca=n't "spe=ll .
((TRN_FARN))

(4c)

A; .. and I decide I'm going to get a "ne=w door ,
 .. and a "ne=w 'jamb .
((TRN_DOOR))

(4d)

N; .. (HH) she was "f=rantically | .. "running 'arou=nd ,
 like 'trying to get "away from him .
((TRN_J&J))

(5) " primary stress

This symbol indicates a word which bears a primary stress. The stressed word is immediately preceded by a double quote mark, with no space between it and the word. In English and many other languages, the particular syllable on which this stress is realized is lexically predictable, and thus need not be indicated in a discourse-level transcription. (For the occasional utterance of a word token in which stress is realized on a syllable other than the normal one, this fact can be captured by using the notation provided for phonetic transcription (§2.4).)

The degree of stress on a given word must of course be judged relative to stress on other words produced by the same speaker in the same stretch of discourse. Since many speakers shift the amount of stress they use fairly frequently, the question of what words to use for comparison can be a difficult one; in many cases the scale must readjusted for as little as a single intonation unit. (While there is a tendency for intonation units to contain no more than one primary stress, this is not a very strong tendency (Chafe, forthcoming).)

(5a)

B; .. "I met 'him ,
and I 'thought he was a 'ni=ce "kid .
S; .. He "is a nice 'kid .
but he's "wei=rd .

((TRN_FARN))

(5b)

B; .. I "never 'met the guy= .

((TRN_FARN))

(5c)

J; 'This is one of the things I've "thought about ,
a "lot .
S; (0) 'Yeah .

((TRN_AESTH))

(6) ' [grave accent] secondary stress

The grave accent character¹¹ indicates a word which bears secondary stress (relative to nearby stressed and unstressed words). The grave accent immediately precedes the word in question, with no space between it and the word.

(6a)

J; ... 'You know ,
'that's just a 'fact about that "thing .

((TRN_AESTH))

(6b)

G; ... (2.2) 'a=nd ,
of course ,
a 'lot of herb 'tea ,
when I'd 'rather be drinking "whiskey .

((TRN_HYPO))

(6c)

R; ... You know ,
"I had been 'practicing this | .. with my "horse ,
.. for a 'lo=ng "time .
but "never when anybody was 'around .
((TRN_RANCH))

Because it can be difficult to distinguish reliably between three degrees of stress -- primary stress, secondary stress, and (implicitly) non-stress -- some researchers may prefer to mark only two degrees of stress, corresponding to stress (to be written with grave accent) and non-stress (unmarked).

2.2 Intonation contour.

The five symbols in this section are used for very partially representing the shape of intonation contours, using for the most part the available symbols of written punctuation. We are not particularly satisfied with these categories and notations for intonation, but we can make do with them as long as it is realized that the punctuation symbols are to be used and interpreted intonationally, and not grammatically or semantically. For researchers who wish to invest the considerable effort required to do justice to intonation in discourse, the work of the London and Lund researchers (Crystal 1975, Svartvik and Quirk 1979, etc.), Gumperz (1982), and others should be consulted (see Cruttenden 1986 for additional references). (For the notion of intonation unit, see Chafe (1979, 1980b, 1987, forthcoming); for a discussion of point-by-point vs. unit summary systems for intonation transcription, see Du Bois (forthcoming a).) (The intonation contour symbols in this section are written at the end of the line they appear in.)

(7) . [period] final pitch contour

The period is used to indicate a pitch contour which is understood as final in a given language. For English and many other languages, this means primarily (but not exclusively) a fall in pitch at the end of an intonation unit. It is important to recall that, since this symbol has intonational rather than syntactic meaning, it can appear in places other than the end of a sentence. Conversely, it need not appear at the end of every (normative) sentence.

(7a)

J; ... (1.5) You're 'not "say=ing something ,
you're "doing something to people .
((TRN_AESTH))

(7b)
A; You 'don't "see them very often .
((TRN_AFR))

(7c)
R; .. For 'what .
B; ... They 'make "rope of it .
((TRN_DEPR))

(7d)
A; 'We don't have a ... kind of
| .. 'vehicle to "tra=nsport these things .
((TRN_DOOR))

(8) , [comma] continuing pitch contour

The comma is used to indicate a pitch contour which is understood as continuing in a given language. In practice this is a loose cover symbol for a variety of nonfinal contours that are neither period intonation nor question intonation. The contour is often realized in English as a level or slight rise in pitch at the end of an intonation unit, but it has other realizations also, each of which no doubt has slightly different pragmatic implications. (A perspicacious and efficient means of distinguishing among the many contours subsumed under this symbol would be a valuable contribution to discourse studies.)

(8a)
R; If you 'think about it ,
'yeah ,
if it 'rains a lot ,
.. the 'horse is always 'we=t ,
.. and it's always 'moi=st ,
.. it's always on something 'moi=st ,
... "Sure it's going to be 'softer .
((TRN_RANCH))

(8b)
D; .. I have my "own 'telephone ,
my "brie=fca=se ,
I can 'work on "cli=ents ,
all the 'time ,
.. (HH) .. 'You know ,
"call them on the 'pho=ne ,
.. and uh= ,
... 'take a "lunch ,
((TRN_CAR))

(8c)
 J; .. (HH) And I "looked 'over ,
 ... "into the 'street ,
 and saw this "cop car,
 'going along ,
 .. "right ... 'next to me ,
 you 'know ,
 like .. 'five miles an "hou=r .

((TRN_J&J))

(9) ? rising question contour

This indicates a marked rise in pitch at the end of an intonation unit, as is characteristic of a polar (yes-no) question. It is not used for a grammatical question uttered with declarative intonation. Conversely, it may appear at the end of units which do not have the morphosyntactic structure of a (normative) question.

(9a)
 B; ... But .. "were they 'rattle snakes ?

((TRN_DEPR))

(9b)
 B; .. 'She never 'raised "hemp ?

((TRN_DEPR))

(9c)
 D; I 'ordered a "thou=sand 'business cards .
 G; Yeah ?
 ... You 'get them 'printed "here ?

((TRN_CARS))

(9d)
 A; .. And we were 'ma=d ,
 .. because 'Gladys had told us we 'had to be 'back by
 "Monday ,
 .. even though 'Monday was a "holiday ?
 .. "Remember that ?

((TRN_AFRICA))

(9e)
 J; <Q ... 'Should we "waste him ?
 or should we "stop him ,
 and ... "then 'waste him . Q>

((TRN_J&J))

(10) ! exclamatory intonation

The exclamation point marks an intonation contour that is understood as exclamatory. It is typically realized as increased pitch range and sudden pitch movement, and sometimes increased loudness.¹²

(10a)
S; "Bo=y was that 'goo=d !
((TRN_AESTH))

(10b)
D; ...(.9) 'No 'basketball .
G; ... (1.0) "Really !
((TRN_CARS))

(10c)
M; .. 'You're "kidding !
S; (0) 'Yeah .
((TRN_FARN))

(10d)
S; ... A 'lot of it's really "ba=d !
((TRN_AESTH))

(10e)
A; ... 'That guy makes 'ZZZ look "kick-ba=ck .
B; ... (1.0) "Wha=t !
((TRN_FARN))

(10f)
B; ... 'we "served the 'rest of it .
R; ... You're "kidding .
B; .. "No= !
((TRN_DEPR))

(11) ~~ [2 tildes] truncated intonation unit

This indicates that the speaker breaks off the intonation unit (§2.10) before completing its projected contour. This occurs primarily in cases where a speaker utters the initial portion of an intonation contour, but abandons it before completing it -- that is, in a false start. Double tilde is not intended to represent the case of a unit which appears incomplete when measured against the canons of normative clause grammar. Intonation units which do not constitute complete clauses are of course commonplace: they are frequently marked with a comma at the end, which signals "continuing" intonation -- a kind of incompleteness, if you will, but of a variety which is distinct in principle from the truncation signaled by double tilde. The comma-delimited unit typically constitutes (apparently) all that the speaker projected to say within the current unit, while in

the double tilde-delimited unit the speaker projected to say more with the current unit, but abandoned some portion of the projected utterance. Truncation is thus measured not against normative notions of clause completeness, but against the speaker's presumed projection for the current unit.

Note that virtually every intonation unit should have some intonation contour symbol at the end of it (i.e. at the end of every line).¹³ If an intonation unit does not have a comma, period, question mark, or exclamation point, it will in general have a double tilde (Du Bois, forthcoming a).¹⁴

(11a)

A; ... But he's ~~
 .. He's 'decided he wants to be 'ca=lled "Doc .
 ((TRN_FARN))

(11b)

J; ... And he= ~~
 .. and he .. "k=icks my 'feet 'apart ,
 ((TRN_J&J))

(11c)

D; ... 'you know ,
 .. to 'get leads ,
 .. and 'talk ~~
 .. 'communicate with 'people on the "phone .
 ((TRN_CARS))

(11d)

A; ... So I%~ ~~
 .. I%~ ~~
 .. I "get in the 'ca=r ,
 ((TRN_DOOR))

(11e)

A; .. (HH) .. And there's ~~
 ... (%) "Nothing ~~
 .. "Nothing with two "tee='s in it ,
 ... does he "get 'ri=ght .
 ((TRN_FARN))

(11f)

R; He 'doesn't have any ~~
 ...(.8) He 'doesn't 'know what's going 'on in this
 "world .
 ((TRN_RANCH))

2.3 Marked quality or prosody.

(12) <Y words Y> marked quality, tempo, etc.

The angle brackets <> can be used (in conjunction with an additional symbol, represented above by Y) to indicate that the stretch of text which they enclose has a marked quality of some sort; the particular quality (higher pitch, increased loudness, etc.) is specified by the supplementary symbol. The amount of text enclosed within these symbols often amounts to several words, and can run across several lines. The marked quality is judged relative to the surrounding discourse produced by the same speaker (e.g., a sentence would be marked for tempo if it is noticeably quicker or slower than the speaker's current or usual tempo). This set of symbols is in principle open-ended, and new ones can be developed to suit a particular investigator's needs. Listed below are some of the more common ones. In our own transcribing, we use these notations sparingly. Also, we use angle brackets to frame only a whole word or group of words; we do not try to place them within a word (e.g. to mark its final syllable as piano).¹⁵ (No space appears between the bracket and the supplementary symbol; but a space precedes and follows each symbol pair.)

<H	H>	high: raised pitch
<L	L>	low: lowered pitch
<R	R>	rapid: quicker tempo
<S	S>	slow: slower tempo
<F	F>	forte: increased loudness
<P	P>	piano: decreased loudness
<Q	Q>	quotation: quoted quality
<%	%>	creaky voice, glottalized
<MARC	MARC>	marcato: each word distinct and emphasized
<ACC	ACC>	accelerando: gradual speeding up
<DEC	DEC>	decelerando: gradual slowing down
<PAR	PAR>	parenthetical prosody
<WHIS	WHIS>	whispered words

Following are several instances of the above special quality notations.

(12a)

M; ...(.9) <WHIS It 'isn't the "same 'thing WHIS> .
X; ... "Looks like it ,

((TRN_LUNCH))

(12b)
 A; .. they 'let us 'alone .
 ... <WHIS 'But we were "scared ,
 .. And 'boy WHIS> ,
 did we "ever get in 'trouble ,
 from 'Milt and 'Arnold .
 ((TRN_AFR))

(13) <P words P> piano: decreased loudness

This angle-bracket pair can be used to enclose a stretch of speech which is produced with relatively decreased loudness.

(13a)
 J; .. <% a=nd I think ,
 <P Well P> ,
 .. this is a 'terrible .. "technique to use %> .
 ((TRN_AESTH))

(13b)
 R; (%) .. (HH) (%)
 ... (%) .. 'But .. uh= ,
 ... (3.0) <P 'What was I going to 'say P> ,
 ... (3.5) X%- ~-
 'O=h ,
 it's "really 'ti=ring ,
 though .
 ((TRN_RANCH))

(13c)
 S; .. 'you= .. 'aren't "aware of any of that .
 J; (HH) Yeah .
 S; .. [Yeah 1] .
 J; [<P<X Right X>P> 1] .
 ((TRN_AESTH))

(14) <MARC words MARC> marcato

The pair <MARC MARC> can be used for a stretch of marcato speech, in which each word is uttered distinctly and with emphasis.

(14a)
 J; ... But the 'goldfish got "s=tuck ,
 ... <MARC 'h=alfway 'into his "mouth MARC> .
 ((TRN_J&J))

(15) <Q words Q> quotation

This pair indicates direct quotations. Its use is warranted where there is some actual shift in the quality of the stretch of quoted speech, as when the quoting speaker imitates some

mannerism of the quoted speaker. (Whether the notation is appropriate where no such shift is audible is debatable.)

(15a)

J; .. 'This is a "literal 'quote ,
.. he 'says to me ,
... (HH) <Q I'm 'going to "res=train 'you .
.. to the "fence Q> .
((TRN_J&J))

(15b)

G; and 'then he'd 'say ,
.. (HH) <Q 'I 'can't "believe it .
'Nobody will 'pick me "up Q> .
((TRN_HYPO))

(15c)

A; and he's 'say=ing ,
...(1.7) (TSK) (HH) .. <Q 'A=h ,
"yea=h ,
.. We 'call 'ourselves ,
the 'special "forces of Santa 'Monica Q> .
((TRN_FARN))

Note that the quotation symbol is not used for metalanguage, such as the name of a letter or a reference to a word.

(15d)

A; and he 'spelt "hee=l ,
h e a "l= ,
S; .. @
A; and he 'spelt "said ,
.. s i a "d .
((TRN_FARN))

(16) <Y<Z words Z>Y> multiple marked features

When a stretch of speech is characterized by two or more coextensive special qualities worth noting, these can be indicated with multiple angle brackets. (The several angle-bracket notations are juxtaposed without any space between them.)

(16a)

J; .. So the 'guy 'yells at me ,
...(0.9) <Q<F Is 'that your "dog F>Q> ?
((TRN_J&J))

(16b)

G; .. They're "drunk .
.. <Q<F "Where's these "Americans F>Q> .
They come "bursting in the "room .
((TRN_HYPO))

(16c)

ALL; [@== 1]
D; [<P<@<X We 'all like to 'eat X>@>P> 1] .
((TRN_DOOR))

2.4 Segmental phonetic detail.

(17) % glottal stop, glottalization

The percent sign indicates the presence of a (prosodic) glottal stop or glottalization. The percent sign is not written in positions where it is phonologically predictable, e.g. at the beginning of vowel-initial words (under certain conditions) in English. Nor is it written where it is lexically required, as commonly occurs in languages with phonemic glottal stop -- for which a distinct symbol should be used. One reason for taking the trouble to transcribe glottal stop is that speakers often seem to use it when they abandon a word or utterance. If glottal stop functions as an (objective) cue for abandoned utterances, it is useful to have it on record. Glottal stop and glottalization may act as a cue to other aspects of the discourse production process as well. (The % is written without surrounding spaces if it is part of a word. If it occurs as an isolated vocal noise, it is written within parentheses, which are surrounded by spaces.)

(17a)

S; ... (%) .. <Q It's "Thanksgiving 'time "now ,
((TRN_AESTH))

(17b)

R; ... 'Down "the=re ,
.. u=m ,
.. it's "mandatory ,
.. you have to% ~~
(%) .. to "graduate ,
.. you "know ,
.. (%) 'well ,
to ... "get the degree= ,
you know ,
... (HH) you "have to 'take this "class .
((TRN_RANCH))

(17c)

J; ... (2.4) (TSK) that the=% | ... (.8) 'set of
"sentences ,
((TRN_AESTH))

(17d)

J; (0) (HH) <% Tha%~ .. this% ~~
.. I "wonder 'abou=t that though ,
I mean %> ,
.. when 'I think of "a=ds ,
((TRN_AESTH))

(18) ~ [tilde] truncated (uncompleted) word

The single tilde indicates that a word is not completed: the end of the word is not uttered. This symbol often occurs in conjunction with a glottal stop, but not always -- either may occur independently of the other. The truncated word in question can be written out in full to achieve normalization;¹⁶ where it seems significant, the actual pronunciation can be written using phonetic notation (see next item). (No space appears between word and tilde.)

Note that even if none of the segments (phonemes) of a word is entirely absent, a truncation may still be involved if the final segment is cut off before it reaches the full duration it would have in a normal pronunciation. For example, if the word the is pronounced so that the final vowel is interrupted (e.g. by a glottal stop) before it reaches half the duration it normally would reach, this warrants use of the word truncation symbol (the%~).

(18a)

A; But 'it was ~~
... till 'five%~ ~~
I 'remember ,
.. "fi=ve o'clock | I 'finally got the 'door in ,
((TRN_DOOR))

(18b)

J; ... You 'know how they "do that ,
so you 'can't s~ .. 'ha~ ~~
.. you don't 'have any "balance .
((TRN_J&J))

(18c)

N; .. and I 'came up 'behind him ,
and I wa%~ ~~
.. I was "hugging him ,
while he was "shaving .
... (HH) 'And as "I was 'hugging him ,
...(0.8) 'he just 'sli%~ .. "dropped .
... "slipped from my 'hands .
.. to the "floor .
he like "f=ainted .
((TRN_J&J))

(21) (TSK) click

This indicates the utterance of a click (usually alveolar) as an isolated vocal noise, e.g. what is commonly written tsk in newspaper cartoon style.

(21a)

R; .. and "the=n ,
...(1.2) (TSK) (%) "our 'job ,
is to 'shape the "shoe=
... to the 'horse's "foot .
((TRN_RANCH))

(21b)

S; .. (HH) .. 'u=m ,
.. (TSK) .. 'ha=s ... "something= .. to=
| .. "communicate ,
.. with 'me= ,
((TRN_AESTH))

(22) (THROAT) throat-clearing

This indicates the sound made by someone clearing their throat.

(22a)

S; (HH) (THROAT)
.. Yea=h .
((TRN_AESTH))

(22b)

S; ... (GULP) (TSK) The "gap is very 'big .
((TRN_AESTH))

(23) (HH) inhalation

This indicates audible inhalation. (The number of H's is by convention fixed at two.)

(23a)

A; ... (1.0) (HH) 'A=nd ,
((TRN_FARN))

(23b)

G; ... (1.4) (HH) .. "I've got to get 'out of that 'place ,
man ,
I 'swear .
((TRN_CARS))

(23c)
 K; ... (HH) .. @"leukemia= ,
 ... (HH) "bronchitis ,
 ... (HH) uh= ,
 .. "tuberculosis ,
 .. @@@@ (HH)
 .. and he's "recovered from all .
 ((TRN_HYPO))

(24) (HHx) exhalation

This indicates audible exhalation.¹⁹ (The number of H's is fixed at two.)

(24a)
 B; ... (4.3) (HHx) ... "Kids in the 'city | 'miss so 'mu=ch .
 ((TRN_DEPR))

(24b)
 S; (HHX) (TSK) .. an "artist ,
 ((TRN_AESTH))

(24c)
 J; ... (1.5) So= .. the%~ (HHx) ~-
 ... (2.2) Well .
 ((TRN_AESTH))

(25) @ laugh syllable

This symbol indicates a laugh, produced as a vocal noise separately from any words produced by the same speaker. One token of @ is used per "syllable" of laughter (when the laughter is brief; for extended laughter, see the following symbol).²⁰

Note that a laugh can be rhythmically integrated as part of a larger (major) intonation unit, or it can be produced as a separate intonation unit of its own (Du Bois, forthcoming a).

(25a)
 K; .. @@@@
 ... (HH) From which you "haven't recovered .
 ((TRN_HYPO))

(25b)
 S; ... (1.0) @ (HH) There 'isn't any "rea=l
 'communication going on .
 J; (0) Yeah .
 ((TRN_AESTH))

(25c)
 A; .. 'That was the "only thing that went 'smoo=thly ,
 that we've "ever do=ne .
 B; .. @ That "you='ve .
 ... "I couldn't even "begin to do it .
 ((TRN_DOOR))

(25d)
 J; .. The 'conclusion is up to "you= .
 S; [m=hm 2] ,
 J; [@@@ 2] in 'going out to --
 (HH) ... to "buy the thing .
 ((TRN_AESTH))

(26) @== extended laughter

This symbol can be used for laughter of extended duration, when the investigator is not currently interested in indicating how many syllables of laughter there are, or when such indication is not feasible.

(26a)
 ALL; [@== 1]
 D; [<X<P<@ We 'all like to 'eat @>P>X> 1] .
 ((TRN_DOOR))

If the actual duration of the laughter is deemed important, it can be timed with a stopwatch and indicated within double parentheses, which are linked to the laughter symbol by an underscore: thus @==_((6.2)) would indicate laughter lasting 6.2 seconds.

(27) @N nasal laugh

This symbol is sometimes used for nasal laughter, in which the air is emitted through the nose. (The unmarked symbol for laughter, however, is simply @.)

(27a)
 J; ... You're "not supposed to 'use these 'powerful
 ["techni=ques 1] .
 S; [@N@N@N@N 1] (HH)
 ... Hm= .
 ((TRN_AESTH))

(28) <@ words @>, @word laughing while speaking

The angle bracket pair (either <@ @> or <@N @N>, as appropriate) indicates laughter over a stretch of speaking (the words enclosed between the two @'s or @N's). Ordinarily we use these symbol pairs to frame only a whole word or group of words; we do not try to indicate laughter on particular syllables within

a word. If a laugh occurs during the utterance of just one word, this can alternatively be indicated simply by prefixing the word with one "@" sign.

(28a)

A; .. (HH) .. and they "stepped out in the 'road ,
and "not only did they have "uniforms on ,
but they.<@ 'also had "gun=s= @> .

[@@@ 1]

B; [(HHx) 1]

((TRN_AFR))

(28b)

S; (0) It's @"pleasing (HHx) .

((TRN_AESTH))

(28c)

K; .. @

G; ... @ There isn't ~~

It's <@ "no 'disea=se ,
at 'a=ll @> .

K; .. 'Athletic feet .

... @N .. 'foot .

D; .. @N .. @'foot .

((TRN_HYPO))

(28d)

N; 'You know ,
'this was a 'rented @"snake ,
@ ,

((TRN_J&J))

2.6 Filled pause and backchannel words.

The following list presents a set of orthographic conventions for spelling sounds used in filled pauses, backchannel, and so on, in spoken English. The purpose of the list is to standardize the spelling of sounds and words that don't ordinarily appear in English dictionaries, so that they can be transcribed consistently and identified systematically by computer. The conventions are based roughly on those used in American newspaper cartoons. (The glosses are given only to suggest to the reader which sound is meant, and are not intended as actual analyses of discourse functions.)

In these notations, nh roughly indicates nasalization of the preceding vowel, and - (hyphen) corresponds to a glottal stop. In actual transcriptions, the lengthening symbol (=) very often occurs in these words.

(29)	uh	hesitation (filled pause)
	um	" " "
	unh	" " "
	m	backchannel, awareness, wonder
	hm	" " "
	huh	" " "
	hunh	" " "
	mhm	affirmative response (final syllable stressed)
	unhunh	" " " " "
	uhuh	" " " " "
	unh-unh	negative response (initial syllable stressed)
	uh-oh	alarm cry

(29a)

J; .. I 'think of | ...(1.2) 'aesthetics .
 .. @ @a=nd ,
 S; .. m=hm= ,
 J; u=h ,
 S; ...(1.5) 'Hm= .
 ... @
 J; ... 'creation of "desi=re ,
 .. for "one thi=ng .
 S; m=hm= ,

((TRN_AESTH))

(29b)

J; .. (HH) .. And I thought ,
 ...(0.7) <Q "Uh-oh= Q> .

((TRN_J&J))

2.7 Transcriber's perspective.

(30) <X words X> uncertain hearing

This pair encloses portions of the text which are not clearly audible. The words so enclosed represent the transcriber's best guess as to what was said, but their accuracy is not assured.

(30a)

J; .. <X I mean X> 'why do people actually "wa=lk
 .. 'into= ,
 (HH) "art museums .

((TRN_AESTH))

(30b)

G; ...(1.2) Well ,
 I ["don't 1] 'normally 'sound like "Lucille 'Ball .
 K; [<X That's X> 1] ~~

((TRN_HYPO))

(31) X indecipherable syllable

The capital letter X indicates segments of speech which are not audible enough to allow a reasonable guess at what was said. One X is used for each syllable of indecipherable speech. (It is usually possible to make at least a rough estimate of how many syllables were uttered, even when one can't make out what the words are.) (Such X's are written alone, without the angle bracket-X symbol which indicates an uncertain hearing.)

(31a)

A; (0) It's "some 'story ,
XX .

((TRN_DOOR))

(31b)

D; .. It was 'basically "me= ,
'you know ,
X 'going "out .
.. The 'problem of going "out .

((TRN_CARS))

(31c)

A; .. And he's got <P "all this ,
.. <X 'you know X>P> ,
... and 'everything "else X ,

((TRN_FARN))

(32) ((COMMENT)) researcher's comment

This pair encloses any comment the transcriber or researcher chooses to make. It can be used as well to note the occurrence of noises not made in the human vocal tract, though such sounds are usually written only if they are relevant to the human interaction at hand (as when speech event participants comment on or otherwise react to the noise).²¹ Comments are best kept short. Writing comments in all capital letters helps to visually distinguish these words from the words actually uttered by speech event participants (§1.3.1).²²

One common comment, as standardized in brief form, is ((MIC)), which indicates noise from the microphone when it is moved (e.g. by the investigator).²³

(32a)

N; .. the "way that | .. the 'Indians "li=ve ,
.. like Cany%~ .. [Canyon de l] 'Chelly= ?
X; [((BLOWS_WHISTLE)) 1]
J; ... <P It's a 'whistle P> .
N; ... The "way that the 'Indians "li=ve ,
.. (HH) is "incredible .
.. They 'still 'live ,
.. u=m ,
.. 'mi=les and 'mi=les "apart from each other ,
.. in "ho=gans ,
.. (HH) And they're s~ .. 'intersper=sed ,
.. and% ~~
.. and they're= ,
...(.8) 'you know ,
...(.9) ((DOG_BARKS_EXCITEDLY))
.. @@@@ .. (HH)
@@@ (HH) (HHx)
J; You 'know% ~~
.. You 'know% ,
.. about "this 'piece ?
N; .. <PAR 'She "always does that PAR> . ((REF_TO_DOG))
((TRN_J&J))

(32b)

J; (0) 'I spend a 'lot of ti=me ,
((MIC)) ... (1.0) "analyzing 'a=ds ,
.. 'myself ,
((TRN_AESTH))

(32c)

A; .. "Think of your 'door ,
.. "here . ((GESTURES?))
((TRN_DOOR))

If it is important to make clear that a given comment applies just to a certain stretch of speech, this can be indicated by enclosing the relevant stretch of speech in angle brackets, and writing the comment within the usual double parentheses. A numerical index is then attached to both the angle brackets and the associated comment, as follows:

<1 words 1> ((<1>COMMENT))

2.8 Turns and overlap.

(33) A; the speaker is A

The speaker of a given line of the transcription is indicated by a code or a proper name (written all in capital letters) at the start of the turn or backchannel (as the first item in the line, to the left of the spoken words). Successive lines uttered by the same speaker need not be so marked. The speaker code or name is followed, without an intervening space, by a semicolon. (At least one space or tab appears between the semicolon and the beginning of the text.)²⁴

While speakers can be represented by codes like "A" or "B", one often gets a clearer impression of who the participants are if their utterances are tagged with personal names, which are more memorable. The names can be the speakers' own, or made-up names, depending on privacy considerations. Names are especially important if the speakers use the names to refer to each other during the course of a conversation -- in which case, obviously, the (made-up) name in the speaker label should match the (made-up) name in the speech (§2.9). (When it is unclear which of several speakers on a tape is responsible for a particular utterance or noise, the symbol "X;" is used to label the unidentified speaker.)

(33a)

A; .. 'No=w that we have the ["si=de door 1] fixed ,
 he could .
B; [That's 'kind of 1] ~~
 .. Yea=h ,
C; (0) @Yeah (HHx) .
D; ... Sure .

((TRN_DOOR))

(33b)

JACK; 'That's all it "does .
 .. It 'doesn't [.. even 1] "reach a 'conclusion .
SANDY; [m=hm 1] ,
JACK; .. The 'conclusion is up to "you= .
SANDY; [m=hm 2] ,
JACK; [@@@ 2] in 'going out to ~~
 (HH) ... to "buy the thing .
SANDY; .. 'Hm= .
 .. 'Hm .
 (HH) ... (1.0) O=kay= .

((TRN_AESTH))

(33c)

X; [((BLOWS WHISTLE)) 1]

((TRN_J&J))

(34) [words n] speech overlap

Square brackets are used to indicate the beginning (left bracket) and ending (right bracket) of overlap between the utterances of two speakers. One set of brackets is inserted surrounding the first speaker's overlapping utterance portion, and a second set of brackets surrounds the second speaker's overlapping portion. This notation signals that the two bracketed utterance portions were uttered at the same time.

A numerical index (n=1, 2, 3, ...) is then assigned to the overlap, and is inserted into each speaker's overlap (prefixed to the right bracket that marks the ending of the overlap). If several overlaps occur within a short stretch of text, these index numbers serve to mark which bracketed text portions go together; successive numbers are used to make clear what is overlapping with what. When there is no danger of confusion (i.e. after a stretch with no overlaps), numbering should restart with 1.

We do not put square brackets within a word. That is, we do not try to indicate the exact syllable or segment where overlap begins and ends, since we have found that such precision is difficult to achieve reliably, and for our purposes may not merit the additional time spent. (It also makes transcriptions harder to read.) If a substantial portion of a word overlaps, it is included within the brackets; if only a small portion overlaps, it is not.

(34a)

B; ... I 'remember ,
...(.8) I 'used to 'help "Benny ,
and I'd get "twenty-five 'cents a 'week .
R; ... (1.2) [A "week 1] !
B; ['Twenty 1] ~~

((TRN_DEPR))

(34b)

B; ... 'They were kind of "scary .
... (1.6) the ['gypsies 1] .
R; [mhm 1] ,

((TRN_DEPR))

(34c)

A; .. (HH) 'But ,
.. [the 'thing ab~ 1] ~~
B; [The 'spe=cial 1] "f=orces !
A; (0) 'Yea=h .
... [But the 'thing "about him 2] ~~
B; [This 'place is getting 2] "wei=rd .

((TRN_FARN))

(34d)

G; ...(.7) Well ,
the "worst [thing | 'I "ever had ,
was "brai=n 1] fever ,
K; [@ @"He's a 'medical 'miracle 1] .
G; when I <X had X> [proposed 2] to "her .
D; [@@ 2]
K; .. @@@@
... (HH) From which you "haven't recovered .
((TRN_HYPO))

(34e)

B; ... But 'I thought "Mom was 'raising= | ...(.7) "hemp ,
or ,
...(1.1) ['something 1] one time .
R; ["What 1] ?
... ["Hemp 2] .
B; ['Hemp 2] .
((TRN_DEPR))

(34f)

B; (0) 'Cliff is "still | .. 'screaming about "tha=t ,
R; ... [Because he 'wanted the "stamps 1] ,
B; [all those "stamps 1] ,
... 'Mom let "Tim 'Canon have .
((TRN_DEPR))

(34g)

J; .. ['Yeah 1] .
S; [Which= 1] .. "colors ... "a=ll of the 'communication ,
[after 1] that .
J; [Yeah 1] .
((TRN_AESTH))

(35) _____ overlap placeholder

Given that in the present transcription system, the intonation unit must not be fragmented onto two different lines (§2.10), it is sometimes useful, in cases of complex speech overlap, to have a symbol that can be placed within one speaker's intonation unit as a placeholder, with which another speaker's words can "overlap". For further explanation of the conditions which warrant use of this symbol, see §2.10 and Du Bois (forthcoming a).

(35a)

J; (HH) "Why [did 1] people "tra=sh that% ~~
 S; [yeah 1] ,
 J; .. [the% 2] ~~
 S; [unhunh 2] ,
 J; .. you know ,
 whe=n .. <PAR u=h PAR> .. 'Stravinsky had his
 .. [___ 3] "premie=re ,
 S; [m=hm 3] ,
 m=hm ,
((TRN_AESTH))

(35b)

J; (0) Tha%~ .. 'that's t~
 | .. where [the 2] "co=gognitive .. ['bias .. 3]
 | kind of [___ 4] .. (HH) ["conce=rns 5] me .
 S; [mhm 2] ,
 [mhm= 3] ,
 [mhm 4] ,
 ['Hm= 5] .
((TRN_AESTH))

(36) (0) latching

This symbol (zero in single parentheses) indicates that the following utterance latches the preceding utterance (i.e. there is no pause -- or zero pause -- between the two speakers' turns). Since it symbolizes a noticeable lack of pause between actual turns, mere continuative backchannel responses (m=hm, etc.) are not ordinarily marked with this symbol.²⁵

(36a)

A; They 'get their 'snake ?
 R; (0) "Yeah !
((TRN_AFR))

(36b)

G; ... <X Least X> she'll 'know what her "good thing was .
 D; ... 'Yea=h .
 G; (0) "That's for sure ,
 D; (0) 'Definitely .
((TRN_CARS))

(36c)

G; .. I was 'using number "seven ,
.. 'gun number "seven ,
D; (0) It "broke the ['chisel 1] .
G; [and 1] it "broke my 'chisel ,
man .
<X Now X> ~~
D; (0) So 'now you have 'no chisel .
G; (0) <X It's X> my "only good 'chisel .
man,

((TRN_CARS))

2.9 Miscellaneous.

(37) ZZZ code for suppressed proper names

The capital letter Z is occasionally used to replace censored proper names in the text (one Z per syllable of replaced text). Note that in most cases (especially where there is more than one name needing to be distinguished) it is preferable to make up names that retain some flavor of the original names (§2.8).

(37a)

ZZ ZZ (could stand for the speaker's utterance of, e.g. the words "Edward Sapir")

(37b)

A: ...(.7) His "name is= | .. "Z .

((TRN_FARN))

(37c)

S; .. (HH) (TSK) He "would be 'just about 'Z 'Z's a=ge .

((TRN_AESTH))

2.10 Prosodic units.

The symbols in this section are used to delimit prosodic units at various levels. They represent the boundaries between the units. (Discourse can also be usefully segmented into morphosyntactic and other kinds of units; see §2.13.3.)

(38) CARRIAGE RETURN intonation unit boundary

The end of an intonation unit (or the boundary between two intonation units) is indicated by a carriage return. Thus each intonation unit appears on a separate line. (For a definition of the intonation unit and a discussion of the cues for identifying it, see Chafe (forthcoming), Du Bois (forthcoming a), and Cruttenden (1986:35-45).) (No space appears between the carriage return and the final character in the line.)

(38a)
 A; 'Well ,
 .. "this is in ... 'bits and "pieces , ((MIC))
 but I was 'coming 'down the "stai=rs ,
 and he was there "ta=lking ,
 .. to this "lady .
 ((TRN_FARN))

(38b)
 S; (HHx) 'That's "interesting ,
 .. I mean ,
 th%~ that you should "pai=r the word 'aesthetics ,
 ... with ["advertising 1] .
 J; [(HH) 1] "Yea=h !
 ((TRN_AESTH))

(38c)
 A; for a "new doo=r ,
 and "door ja=mbs ,
 "ha=rdwa=re ,
 "stai=n ,
 "pai=nt ,
 .. 'all the "stuff that you 'nee=d ,
 ((TRN_DOOR))

(38d)
 M; ... It's that "you=ng ,
 .. ["pa=le] ,
 A; ['Yeah 1] .
 M; .. 'guy with the "da=rk 'hair .
 ((TRN_FARN))

Note that a speaker's intonation unit should not be broken up into two lines even if another speaker's utterance intrudes between the intonation unit's beginning and its end. In dealing with such cases the overlap placeholder symbol "___" (underscore) is sometimes useful (§2.8).

(39) | intonation subunit boundary

This symbol (pipe) separates one intonational subunit from the next, within one intonation unit. It is used where the intonation contour almost seems to warrant recognition of a new intonation unit, but not quite -- that is, where the unit has some of the features of a prototypical intonation unit, but not all. Needless to say, this is often a matter of close judgement, and should be evaluated accordingly.²⁶ Some discourse researchers prefer not to use a concept of intonation subunit, and so would not use this symbol. This symbol is by convention associated with the following text, so that it precedes any pause which is associated with the following unit (§2.1).²⁷

- (39a)
 S; ... ['Well 1] ,
 A; [You're 'off 1] the "highway ,
 'aren't you | "here ?
 ((TRN_FARN))
- (39b)
 A; ... The 'hinge is | .. on the "inside .
 B; (0) Right .
 ((TRN_DOOR))
- (39c)
 S; .. (HH) So= that the= .. "reason
 | 'why I'm being 'communicated with ,
 .. 'i=s | so that 'I can be 'made to "do something .
 ((TRN_AESTH))
- (39d)
 A; which was "like a | ... (HH) "Workmate 'be=nch ,
 .. type "deal ,
 with a 'gui=de ,
 and everything ,
 ((TRN_DOOR))

(40) SPACE word boundary

Although in principle the word boundary pertains as much to morphosyntactic segmentation (§2.13.3) as to prosodic segmentation, it is so much taken for granted as a feature of any transcription that it is included here with the other basic discourse transcription notations. The space character is used to separate lexical words, as in normal orthographic convention. A space also separates other word-equivalent (for computer sorting purposes) symbols, such as punctuation, brackets, etc. As noted above (§1.3.4), for computational purposes it is useful to follow consistent conventions in inserting spaces in a transcription. Therefore, throughout this document we have commented on where spaces should and should not go.

In the following example, each of the space-delimited strings is treated computationally as a word, allowing appropriate coding to be attached to the symbols for speaker code, latching, backchannel response, pause, audible inhalation, final intonation contour, etc., if desired.

- (40a)
 S; (0) Hm= .
 .. Hm .
 (HH) ... (1.0) O=kay= .
 ((TRN_AESTH))

2.11 Capitalization.

(41) Capital "sentence" beginning

Application of standard literary conventions for capitalization of word-initial letters -- beyond those governing proper names,²⁸ which this transcription naturally follows -- presents a problem to the degree that the "sentences" of spoken discourse, if such units exist, do not neatly correspond to the sentences of written discourse. Punctuation symbols (period, comma, etc.) are used to indicate intonation contour, but the unit which in the spoken discourse transcriptions is delimited between two period symbols does not often correspond directly to a standard written sentence. Moreover, the resulting transcription does not always make for easy reading, to the extent that the punctuation symbols, given their intonational value, are not available to effectively cue the reader to any sentence structure per se. For these reasons, a capital initial letter is used to indicate the apparent beginning of a new sentence-like unit: perhaps the start of a new proposition, or a new speech act.

Unlike in writing, there need not be any absolute correlation between a period at the end of one line and a capital at the beginning of the next. In fact, a very common configuration is a comma (,) or double tilde (~~) at the end of the first line followed by a capital at the beginning of the second. Since the capital letter is taken to mark simply the beginning of one of these sentences, and not necessarily the end of the previous one, there is no need for the previous sentence to have been brought to a full conclusion. Thus several false-start intonation units in a row, each beginning (or attempting to begin) the same sentence, are each written with an initial capital, even if only the last of the units is ultimately brought to completion as a full sentence.

It is important to emphasize that since capitalization is not claimed to mark prosody (already marked by punctuation symbols), its primary use in the present system is to provide a rough feel for something of the spoken discourse's sentence unit boundaries (possibly correlated with conceptual, speech act, or rhetorical units), and thus to make the transcription more readable. It should be kept in mind, however, that the nature of the contrast signaled by capitalization is not easy to codify precisely. There is no claim that the capital letters consistently correspond to a specific acoustic cue in the audio record, nor that they are even necessarily audible. Neither is any hard and fast structural or functional analysis intended. In this sense capitalization is simply a rough display device which is available for use at the transcriber's or researcher's discretion, and should be interpreted in this light.²⁹

(41a)

K; (HH) .. But "he'll recover .
He'll% ~~
D; (0) What "is that .
K; (0) 'He'll be over his leprosy ["soo=n 1] .
G; ['Nothing 1] ,
it's just 'dry "ski=n .
K; .. @
G; ... @ There isn't ~~
It's <@ "no 'disea=se ,
at 'a=ll @> .
K; .. 'Athletic feet .
... @N .. 'foot .
D; .. @N .. @'foot .

((TRN_HYPO))

2.12 False start.

(42) <FS words FS> false start

For a widely-known language like English it is probably best to avoid inserting implicit judgments about correctness and repair at the transcription level (Edwards 1987). (Such interpretations are of course commonplace, and fully appropriate, at the more interpretive and theory-bound level of coding.) But the picture changes when one considers little-known languages. A linguist who publishes a transcription of a language that is known by only a few individuals in the world would do a decided disservice to simply reproduce all the words as spoken, without any indication of which were considered correct and which were not, in the eyes of the native speaker. This is, after all, the kind of speaker knowledge which native speakers of English make use of without thinking when they read and understand a transcription in English which does not overtly alert them to the disfluencies it contains. But in a little-known language, such knowledge may well be inaccessible to any but the linguist who published the text and one or more native speakers in a faraway place.

One solution that has often been adopted is to edit out disfluencies in the text, in accordance with judgments of a native speaker. While this kind of edited text is appropriate for some purposes (e.g. publication of indigenous literature as the native author would have it presented), for serious spoken discourse research (of the sort that takes account of the process of discourse production), it is obviously preferable to retain every word exactly as uttered. If care is taken to indicate, for the benefit of the non-native speaker, which items are editable, these readers can then have the best of both worlds -- they can skip over the (marked) false starts to obtain an edited version, and include them to better understand the discourse production process. But if the distinction between false starts and

natively ratified material is not indicated, no one who lacks access to a native speaker can reliably reconstruct this information.

Thus, while one probably should not specially mark false starts in a transcription of English discourse, one should do so in, for example, a language like Xinca or Sacapultec Maya. The angle bracket notation is made available for this purpose. (English examples are presented below with this notation just to illustrate how it would be used.)

(42a)

A; .. <FS He has= FS> ~~
.. <FS a% FS> ~~
.. The "spelling is what 'first 'turned me on "to him .
((TRN_FARN))

(42b)

A; and <FS they% FS> ~~
.. they% .. "poked into the%~ | .. the "mou=lding ,
along the ['side 1] .
B; [unhunh 1] ,
((TRN_DOOR))

(42c)

G; ... 'A=nd ,
.. 'you know ,
.. <FS 'He= would like FS> ,
.. (HH) 'He would like ,
"w=alk out on the "freeway ,
and 'try to "hitchhike ,
((TRN_HYPO))

(42d)

J; [@@@ 2] in 'going out <FS to FS> ~~
(HH) ... to "buy the thing .
((TRN_AESTH))

2.13 Reserved symbols.

Some of the symbols that are not used in transcribing need to be reserved for other important uses. Bookkeeping, phonemic orthography, and morphosyntactic coding, all call for the use of some specialized symbols. Each of these domains is addressed below. In addition, a few symbols are left undefined, free to accommodate the diverse special needs of users of the system.

2.13.1 Bookkeeping. The backslash (\) is reserved for bookkeeping use, to mark any line in a transcription file which is not part of the transcription per se, but which encodes other useful information. Examples might include lines indicating the title of a transcribed text, the transcriber's name, and so on (§4.2).

(43) \ bookkeeping line

(43a)
 \TRANSCRIPTION TITLE; Aesthetics and Advertising

2.13.2 Phonemic orthography. Apostrophe (') must be reserved for contractions in English (she'll, don't) and other similar orthographies. Alternatively, it can be reserved for representing glottalized phonemes in languages that represent these as digraphs (t', k', etc.), and so on.

The colon (:) is reserved for phonemic length in languages which typically represent long vowels in this way.

2.13.3 Morphosyntactic coding. Several symbols are reserved for morphosyntactic coding. The most important is hyphen (-), for indicating morpheme boundaries in languages where this is desirable. (For languages like English, if morpheme boundaries are not to be indicated, the hyphen can be used in its normal orthographic function, i.e. in the standard spelling of certain compound words.) For other, more specialized forms of morphosyntactic coding, the following are reserved: plus (+), ampersand (&), sharp sign (#), and curly brackets ({}).³⁰

2.13.4 User-definable. Several symbols have deliberately been left without definition in this system, to give researchers room to develop a system that responds to their special needs. These symbols include the asterisk (*), slash (/), dollar sign (\$), and raised caret (^).³¹ By combining these symbols with numbers or letters as digraphs, a large number of new symbols could be generated. Also, the angle bracket notation (§2.3) allows for a similarly open-ended set of user-defined symbols.

CHAPTER 3. THE TRANSCRIBING PROCESS

3.1 Where to begin.

When a researcher first listens to a tape recording of a free-flowing conversation, he or she is presented with a potentially overwhelming amount of information, which must be gleaned and set down on paper. The previous chapter has sought to provide transcribing conventions which will allow the information to be adequately represented. But the question still remains of where to start, and how to follow through to the point where the transcription becomes, if not perfect and complete -- a state which practically is unattainable -- at least adequate for serious scholarly analysis. This chapter, then, will present one view of how to go about producing a viable transcription of natural spoken discourse. Since at this level we are in effect talking about a working style, it should be clear from the outset that this is not the only way to proceed. The following method has worked well for many, and may provide some useful guidelines for transcribers.

The first question is, how does one deal with all the information on the tape? Does one start by listening to the first three-second segment twenty times over, while trying to write down every detail and nuance that occurs in it? Rather than attempting this, we have found it useful to start with broad brush strokes, as it were, and later proceed to fine -- to first sketch in the general outlines of the conversation, and then go back to fill in details. And when the time comes for the details, these are most likely to be got right if one listens for one kind of detail at a time. For this the best procedure is to make several successive passes through the tape recording, focusing each time on a different task. Each of these procedures is described below, in the order in which it is most effectively performed.

As to how much material to address at one time, in general we listen to a few seconds of tape, then stop the tape recorder, and write down what we hear. If necessary we wind the tape back two or three seconds and listen again -- and, usually, again and again, for any question that requires a close judgment. When the tape being transcribed is long, we often find it helpful to work in this way through a stretch of about three to five minutes, and then to go back through this segment again for each of the procedures in the list below -- until all the procedures are completed and the transcription can be considered finished, for one's current purposes. Working on just a few minutes of material at a time, one's auditory memory of the discourse remains fresh from one pass to the next -- and, being auditorily oriented, one picks up new details more quickly.

Given the amount of wear and tear that this kind of intensive listening can inflict on a tape, it is a good idea to work from a copy rather than from the original tape. And since wear and tear on the transcriber can likewise become considerable, it cannot be overemphasized how immensely preferable it is to use a cassette tape playback machine with a foot pedal, of the sort that office workers use in transcribing dictated letters.³² The labor saved in transcribing -- as much as 70 per cent -- will repay the cost of the machine in a short time, and moreover the increased ease of use tends to encourage more accurate transcribing.

To ensure that everything that is on the tape is heard (which might be jeopardized by exclusive reliance on the relatively low audio quality and mono playback of most foot-pedal cassette players), at least one final check of the transcription should be made using a good stereo cassette player with two loudspeakers (assuming the original recording was made in stereo).

Since good transcribing virtually always requires multiple drafts, it goes without saying that it is desirable to do the typing on a microcomputer.

Finally, it must be said that the first requirement for a good transcription is one which is often overlooked: a good tape recording. If the audio tape is noisy or unclear, the transcriber will be forced to spend an inordinate amount of time rewinding the tape and straining to catch the noise-obscured words. Moreover, the resulting transcription is likely to contain a needlessly high proportion of inaudible stretches or uncertain and unreliable guesses, which of course does not make a good foundation for discourse research. To make a good recording of conversation in natural contexts, the most important requirements are, in order of importance:

- (1) Minimize background noise. Become aware of noise in the environment. If possible turn off radio, television, and refrigerator; avoid recording around traffic, motors, other nearby conversations, barnyard animals, etc.
- (2) Place microphones effectively: close to, and oriented toward, the target speakers.
- (3) Use recording equipment which is unobtrusive and of reasonably good quality.³³

3.2 Outline of transcribing procedures.

In providing the following outline of the transcribing process, the division of the whole into discrete steps is no doubt artificially neat. While it is very useful to follow a systematic procedure -- especially in checking for phonetic detail and for intonation units -- it is to be expected that one

will often notice, and write down, a detail from Step 11 while one is mainly concentrating on Step 4 (or vice versa). The "steps" then are to be taken with a grain of salt. But whether the procedures are carried out in sequence or not, the list remains useful as a summary checklist of the many details that one must at some point attend to. In the end, transcribing becomes a matter of personal working style, and each transcriber will arrive at a procedure that works best for them.

Transcribing novices may find it useful to begin by reading just Steps 1-12, and then following these steps in carrying out a transcription of a few minutes of spoken discourse. After gaining some experience via this brief immersion in the transcribing process, the reader can then return to and follow the remaining steps (13-18) -- when the problems they refer to will be more familiar, and the commentary will make more contextualized sense.

Step 1. Words (rough). Roughly transcribe the words spoken -- the segmental information. Concentrate on one speaker at a time: the one who has the floor at a given point on the tape. At this stage, don't try too hard to catch the backchannel responses of the other speakers. Indicate who the speaker is.

Step 2. Intonation units (rough). Divide the transcribed words into intonation units (§2.10). The intonation units do not yet have to be perfectly precise, but it is important to get the transcription into manageable chunks at this early stage, so that overlaps can be aligned in the right place (Step 5), etc. The more accurate the intonation units are at this stage, the less work of realignment there will be at Step 16.

Step 3. Intonation contour and prosody (rough). For each intonation unit, indicate its contour with comma, period, etc. (§2.2). This will be subject to fine tuning later, but a rough indication is useful at this stage.

Note that the identification of intonation unit boundaries (Step 2) is both practically and in principle prior to the specification of the intonation contour shapes (Step 3). Contrary to what one might assume, intonation unit boundaries cannot be reliably derived from a transcription which was made with only an indication of contour shape (comma, period, etc.). The transcriber must listen for the location of intonation boundaries per se, in order to identify them effectively (Du Bois, forthcoming a). Once this is done, a summary statement of the intonational shape of this unit can be given using comma, period, etc.

Step 4. Backchannel and overlap words. Transcribe the words of the backchannel responses (mhmm, yeah, etc.), as well as any overlapped speech by speakers who do not have the floor (§2.6).

At this stage, don't worry too much about exactly where the overlaps occur.

Step 5. Backchannel and overlap location. Now listen for the precise location of all overlaps (backchannel, interruptions, etc.), as transcribed initially in the previous step. Indicate both beginning and ending of overlap, using the appropriate bracket symbols (§2.8).

When, as often happens, it is hard to hear just where an overlap begins, or where it ends, the following listening technique may be usefully applied to the relevant stretch of speech. Since overlap typically makes the affected words seem harder to hear, or more obscure, listen for the absence of overlap -- where words seem "in the clear". To find the beginning of the overlap, listen to determine which is the last word that sounds clear (not overlapped). The next word should be where the overlap begins, so insert the left bracket before it. Similarly, at the end of the overlap, determine which is the first word that sounds clear, and insert the right bracket (for overlap ending) just before it.

Step 6. False starts and filled pauses. Take special care to listen for false starts and filled pauses (um's, uh's, etc.), and write them in exactly as uttered. If appropriate for the language you are transcribing, mark false starts with the angle bracket notation (§2.12). (Remember to give false starts their own intonation unit as appropriate; see Step 14.) Also take note of any uncompleted words, and indicate these appropriately (§2.4).

Step 7. Nonverbal noises, etc. Listen for nonverbal noises, and write them in (§2.5). It may be useful to make several separate passes through the tape, to check especially for (in succession):

- a. breathing
- b. laughter
- c. clicks and glottal stop
- d. miscellaneous noises (including interactionally relevant ambient noises, to be written in double parentheses)

Step 8. Pause location and latching. Listen for pauses, and write them in where they occur (§2.1). Where appropriate, indicate the absence of a pause, i.e. latching.

Step 9. Pause duration. With stopwatch at hand, determine the duration of each of the pauses noted in the previous step. Where appropriate, adjust the notation of pauses as two-dot, three-dot, or timed (§2.1).

Step 10. Stress. Listen for syllables which receive primary stress, secondary stress, or no stress, as judged relative to their neighbors, and indicate them appropriately (§2.1). Remember, while it is true that in many cases there is just one primary stress in an intonation unit, there are likewise numerous cases of intonation units with more than one primary stress.

Step 11. Lengthening. Listen for syllables which are lengthened relative to their neighbors, and indicate appropriately (§2.1).

Step 12. Marked quality. Listen for stretches of speech which display a marked alteration or shift in voice quality, tempo, pitch, etc., and indicate them using the appropriate angle bracket notations (§2.3).

Step 13. Intonation units (fine). This is a major step, given that the accurate identification of intonation unit boundaries is both demanding and important. The considerations outlined in Cruttendon (1986:35-45), Chafe (forthcoming), and Du Bois (forthcoming a) should be given close attention here. It is best if attention is paid individually to identifying each of the following kinds of intonation units, via separate passes through the tape recording if necessary.

a. Major intonation units. First listen for major (full-sized) intonation units, to make sure the boundaries of these have been identified correctly. (Where appropriate, indicate the presence of any intonation subunit boundaries.)

b. False start units. Check each false start, to make sure that it is accorded its own separate intonation unit, whenever appropriate (i.e. most of the time).

c. Minor units. Make a special effort (and a separate pass) to listen for "minor" intonation units, that is, units which are shorter than usual, and which may have less content than a full-sized, major intonation unit. Do not hesitate to recognize one-word intonation units. Likely candidates, each of which should be individually scrutinized for possible (not automatic) minor intonation unit status, include:

- i. conjunctions (and; and uh)
- ii. particles (well; yes; no)
- iii. adverbials (especially prepositional phrases)
- iv. vocatives (especially proper names)
- v. filled pauses (uh)
- vi. miscellaneous (I mean; you know, etc.)

Step 14. Intonation contour (fine). Listen to determine the correct intonation contour for each intonation unit (and for anywhere else that intonation symbols are appropriate) (§2.2).

a. Completed contours. Check all commas, periods, question marks, and exclamation points to ensure that they are correct, and are used appropriately for representing intonation rather than presumed sentence structure.

b. Truncated contours. Check to make sure that each intonation unit has a contour symbol at the end of it; indicate any truncated (uncompleted) intonation contours where appropriate (§2.2).

Step 15. Realignment. One effect of introducing a new intonation unit boundary into the transcription (as is likely to occur in Step 13) is that certain portions of the transcription will no longer be aligned correctly, or at least, aligned in the clearest way. Unfortunately, this consequence of correcting intonation unit boundaries is often overlooked. It requires a careful pass through the transcription, with special scrutiny of all backchannels, speech overlaps, speaker labels, and pauses in the vicinity of any changed intonation unit.

Even without a change in intonation units, realignment is often called for in cases where one's assessment of "whose pause" changes, or where the sequencing of turns (in multi-speaker overlapping interchanges) could be improved so as to more clearly show who is responding to whom. Needless to say, realignment will probably also be required wherever previously overlooked speech is heard for the first time and introduced between two turns in the transcription.

a. Backchannel and overlapped turns. The alignment of turns needs careful scrutiny wherever a newly introduced intonation unit boundary breaks a long line into two shorter ones, especially if any portion of the original line overlaps with another turn.

Consider the following (hypothetical) transcription revision, and the realignment that it requires. The transcriber initially hears the first sentence in (i) as a single undifferentiated intonation unit:

(44a) Preliminary transcription

A; It's really helpful [... for my 1] studies .

B; [mhm,
Oh . 1]

The transcriber later realizes that the sentence is actually in two intonation units, and introduces a new intonation unit boundary, with a comma and a carriage return:

(44b) Revised transcription
A; It's really helpful ,
 [... for my 1] studies .
B; [mhm ,
 Oh . 1]

But once this change is made, it becomes clear that the transcription needs to be realigned, by placing each of speaker B's backchannel responses directly following the utterance by speaker A that it responds to:

(44c) Realignment
A; It's really helpful ,
B; mhm ,
A; [for my 1] studies .
B; [Oh . 1]

This displays the actual nature of the conversational interchange more clearly to the reader of the transcription . Note that what was formerly seen as overlapped no longer is so, and the apparent pauses of the preliminary transcription are now no longer present. While in this simple case, no great confusion might have resulted from failing to realign the revised transcription, in other cases realignment is more crucial to correct interpretation.

b. Speaker attributions. While this is little more than a bookkeeping problem, it is important to make sure that in moving some words to a new line, one does not create the appearance that a different speaker spoke them -- as may happen if the words are moved to a point after another speaker's backchannel (or turn). In such cases the speaker attributions (e.g. A;) for all the lines involved -- including possibly intervening unmodified lines -- must be checked and updated as necessary.

c. Pauses. When the representations of the (partially overlapping) turns of two different speakers are transposed in sequence, a pause that was notated at the beginning of the turn of the former first speaker may now need to be reassigned to the beginning of the turn of the new first speaker. In many cases such changes can also affect the amount (timed duration) of a pause that is to be attributed to a given speaker, and even the existence of a pause. Thus, pause timings and attributions must be checked and updated in these circumstances, if errors are not to be inadvertently introduced.

Step 16. Nonaudibles. If working from audio tape only, check the transcription for places where nonaudible events seem likely to have occurred. The most common case where such information can be recovered tentatively (of course) is where an audible demonstrative pronoun or determiner was possibly

accompanied by an inaudible gesture (e.g. .. "Think of your 'door, .. "here . ((GESTURES?))). Of course, the only reliable indicator of such visible but nonaudible events is a visual record such as a videotape. The reason for attempting to write this tentative information is simply to remind the researcher and later readers that there is more to communication than vocalization, and to encourage them to be mindful of the at least potential consequences for interpretation of any gestural events that are likely to have occurred.³⁴

Step 17. Capitalization. Check the transcription to make sure that capital letters are used wherever a new "sentence" begins (including false starts of sentences) (§2.11). Add capitalization as necessary.

Step 18. Final check. Listen to the whole transcribed section of conversation, preferably on a stereo cassette player with two loudspeakers. Make any corrections needed.

Step 19. Other checkers. Have someone else check the transcription -- with the same care as described here, using the full checklist. Make the necessary additions and corrections. If possible, have additional people check.

Resolve any remaining disagreements in a meeting of the transcribers and checkers who have worked on the tape. Such meetings, where tapes are listened to and transcribing decisions and issues are discussed, are of incalculable value for improving reliability and consistency across transcribers, and for raising the general level of sophistication of all transcriptions produced.

Step 20. Line numbers. Finally, add line numbers for reference purposes (one number per line of text), if needed. (This can be done automatically in some word processors, such as WordPerfect.)

For a one-page summary which lists the above 20 steps, see the "Transcribing Procedure Checklist" in Appendix 1.

3.3 Conclusion.

The above described steps for transcribing spoken discourse no doubt sound like a tall order, and we would not wish to minimize the effort required. But as the transcriber gains experience in working with discourse materials, the procedures become familiar, and the work begins to progress smoothly, with little need to refer to this handbook. And once these procedures have been completed with care and insight, the result should be a transcription of high quality -- a document that researchers can rely on with confidence for the most intensive discourse analysis.

Even then, one must face the fact that no transcription can capture everything that takes place in spoken interaction. The transcription is always selective, reflecting concerns and theories of the researcher. The audiotape (or videotape) always contains richer -- if less analytically accessible -- information than its transcription. This speaks to the ultimate value of the tape itself, and to the need for archival preservation and access, which alone can make it possible to ask new questions in the future.

A tape that cost two dollars at the store effectively appreciates in value -- once it has received, say, fifty hours of attention from a transcriber and the same from a checker or two - - to as much as a thousand dollars or more. To let such a valuable tape get lost, damaged, or accidentally erased is clearly profligate, but so is simply ignoring it. A tape that has been transcribed belongs in an archive, safe and accessible, even more than one that has not. Other researchers will appreciate that they do not have to take the transcription on faith, and moreover can go beyond it to investigate phenomena which the original transcriber was not attending to, and so left out of the transcription.

CHAPTER 4. GATHERING INFORMATION ABOUT THE SPEECH EVENT

For a tape recording of a speech event to be effectively used by discourse researchers, not only the tape, but certain background information about it as well, must be recorded. For a given speech event, a proper discourse data collection needs to have on file:

- (1) a copy of the tape recording,
- (2) a copy of the transcription (if one has been made), and
- (3) background information about context and speakers.

For our general research purposes, background information of several kinds is useful. For each kind of information, we provide a separate form, consisting of a single sheet of paper (which is color-coded to make things easier to keep track of). The first sheet is filled out shortly after making the tape recording. The others can be filled out later at home, but the sooner the better. As soon as a tape is recorded, the most basic information (see Quick Sheet) should also be written on the cassette itself.³⁵

4.1 Information sheets.

(a) Quick Sheet: Basic Tape Recording Information (goldenrod). This sheet asks for the most basic and essential information about the tape recording. It is designed so that it will be easy to fill out -- preferably on location immediately after the recording is made.

(b) Speaker Sheet (blue). This sheet asks for basic information about the speakers on the tape (age, sex, etc.).

(c) Tape Log (green). This sheet asks for a brief notation of what is on the tape, to be filled out at the investigator's leisure upon listening to the playback. This information is often useful as a guide or table of contents that can help researchers decide what portions of a tape to return to and transcribe later. Filling out this form is optional, but useful.

(d) Transcription Sheet (pink). This sheet asks for information about the transcription of the tape. It should be filled out at the time the transcribing is done, and updated whenever the transcription is checked and updated. (Alternatively, a header can be inserted at the beginning of the computer file for each transcription (§4.2).)

(e) Transcribing Procedure Checklist (lavender). This sheet allows the transcribers and checkers to check off each of the transcribing procedures listed in §3.2 as it is done. (A separate sheet should be used for each time the transcription is checked.) Like the pink Transcription Sheet, these Checklist

sheets should be attached to the draft of the transcription, for use as it is made and revised.

Discourse researchers stand to benefit greatly from regularly and promptly filling out these (or other similar) information sheets -- even if not every blank gets filled in. Although the Quick Sheet is the most essential, all of the sheets provide valuable information for discourse research. Most can be filled out quite easily if this is done at the time of the recording. Trying to remember or recover this information later on -- when you need it -- is likely to be more difficult, time-consuming, and unreliable.

4.2 File header.

While recording information like the above on appropriate paper forms is a good idea, the fact is that the transcription itself is what gets the most attention, as it is passed from transcriber to checker, from checker to user, and so on. Thus it becomes useful to embed the most important items of information about the speech event within the transcription file itself, along with certain other useful items like the computer filename and the names of transcribers and checkers. Then, whenever this file is printed out or transferred from one researcher to another, the text will be accompanied by the relevant contextual information. Otherwise, some of the people who end up using the transcription are likely to have only the words, and no information about their context, nor about who transcribed them.

When general contextual information is included in a transcription file, it should be distinguished overtly from the actual text of the transcription. This can be done, for example, by starting each line with a unique character such as a backslash (§2.13.1). (This makes it possible for appropriately designed computational procedures to skip all lines beginning with a backslash, or conversely, to apply exclusively to them.)

Appendix 2 presents a sample of a header containing relevant items of information.³⁶ A blank copy of this file can be inserted into the beginning of each transcription file, to be filled in at the appropriate time by the transcribers, as indicated below:

```
\TRANSCRIPTION TITLE;   Door Story
\FILENAME;              doorstor.trn
\TRANSCRIPTION NUMBER;  4021
\TAPE NUMBER;          402
\RECORDING DATE;
(And so on -- see Appendix 2.)
```

Note that the string of characters \TEXT BEGINS; should appear on a line all by itself, immediately preceding the first

line of actual transcribed speech. The string \TEXT ENDS; should appear on a line by itself, immediately following the last line of transcribed speech (i.e. at the very end of the file; cf. MacWhinney 1988).

APPENDIX 1: INFORMATION SHEETS

On the next few pages are copies of the information sheets that we use in our spoken discourse research. These forms can be used as is, or serve as models for the design of new forms adapted to other research needs. The forms (and their color coding) are:

- | | |
|-------------------------------------|-----------|
| A. Quick Sheet | goldenrod |
| B. Speaker Sheet | blue |
| C. Tape Log | green |
| D. Transcription Sheet | pink |
| E. Transcribing Procedure Checklist | lavender |

QUICK SHEET
Basic Tape Recording Information

After you have made a tape recording (a whole tape or part of a tape), please fill out the following information as soon as possible:

Your name _____ Date _____

Tape (descriptive title)

Date recorded _____ Time _____

Location _____

Recorded by (name) _____

Language/Dialect _____

Genre _____

Speakers _____

Setting/circumstances _____

OPTIONAL:

Tape number _____ Series # _____ of _____

Tape recorder _____ Stereo _____ Dolby _____

Microphone(s) _____

(Archive use) _____ Tape # _____
Santa Barbara Corpus/Quick/A-Goldenrod/11-6-88 Transcr# _____

SPEAKER SHEET

Your name _____

Date _____ Tape _____

Please fill out a separate sheet for each speaker on the tape recording. This information will be held confidential, to be used for discourse research purposes only. Name and address information is optional.

Speaker's name _____

Speaker's address _____

Speaker's sex (m/f) ____ Age (estimate if preferred) _____

Occupation _____

Education _____

Native speaker of _____ (language)

Dialect (i.e. city, state, or region where speaker grew up)

Does the speaker have a nickname (or other special or abbreviated name) that is used on the tape recording? If so, please list:

What relationship does this speaker have to other people who speak, or are spoken about, in this conversation? Indicate the relationship (e.g. sister, boyfriend, neighbor, etc.) in the spaces below (optional):

Person	Relationship
(a) _____	is this spkr's _____
(b) _____	is this spkr's _____
(c) _____	is this spkr's _____

Comments _____

(Archive use) _____ Tape # _____
Santa Barbara Corpus/Speaker/B-Blue/11-12-88 Transcr # _____

TAPE LOG

Name _____ Date _____ Tape _____

Please provide information about tape contents (e.g. "dinner conversation", "long silence"), elapsed time or duration (e.g. "15 min."), foot number (e.g. "76"), sound quality or audibility (e.g. "good", "noisy", "fair"), speakers (e.g. "Cora and her mom"), and any general comments (e.g. "good material -- transcribe this section"). Even approximate or partial information will be helpful. Use a separate sheet for each tape.

SIDE A/B	TIME/ FOOT#	CONTENTS	SOUND QUAL.	SPEAK -ERS	COMMENTS

(Archive use)
Santa Barbara Corpus/Log/C-Green/11-27-88

Tape # _____
Transcr # _____

TRANSCRIPTION SHEET

Please fill out this sheet at the time of transcribing. Attach the sheet to the transcription draft, so that each time the transcription is checked, the information in the box below can be updated.

Name _____ Date _____

Tape _____ Side (A/B) _____

Tape section transcribed (e.g. "beginning", "middle", "end" -- or give foot numbers if possible) _____

Transcription title _____

What transcribing conventions did you follow?

- Discourse Transcription (Du Bois et al. 1988)
- Other transcribing conventions: _____

Transcribed or checked by (name)	Date	Comments
1		
2		
3		
4		
5		
6		
7		

(Archive use) Tape # _____
 Santa Barbara Corpus/Transcription/D-Pink/11-3-88 Transcr# _____

TRANSCRIBING PROCEDURE CHECKLIST

Name _____ Date _____

Tape _____ Transcription _____

- ___ 1. Words (rough)
- ___ 2. Intonation units (rough)
- ___ 3. Prosody (rough)
- ___ 4. Backchannel & overlap words
- ___ 5. Backchannel & overlap location
- ___ 6. False starts, filled pauses, & truncated words
- ___ 7. Nonverbal noises, etc.
 - a. breathing
 - b. laughter
 - c. clicks & glottal stop
 - d. miscellaneous noises
- ___ 8. Pause location
 - a. pauses
 - b. latching
- ___ 9. Pause duration (stopwatch)
- ___ 10. Stress
- ___ 11. Lengthening
- ___ 12. Marked quality, pitch, tempo, etc.
- ___ 13. Intonation units & subunits (fine)
 - a. major intonation units & subunits
 - b. false start units
 - c. minor units
 - i. conjunctions (and; and uh)
 - ii. particles (well; yes; no)
 - iii. adverbials (esp. prepositional phrases)
 - iv. vocatives (esp. proper names)
 - v. filled pauses (uh)
 - vi. miscellaneous (I mean; you know, etc.)
- ___ 14. Intonation contour (fine)
 - a. completed contours
 - b. truncated contours
- ___ 15. Realignment
 - a. backchannel and overlapped turns
 - b. speaker attributions
 - c. pauses
- ___ 16. Nonaudibles (esp. gestures)
- ___ 17. Capitalization
- ___ 18. Final check
- ___ 19. Other checkers
- ___ 20. Line numbers

(Archive use)

Santa Barbara Corpus/Checklist/E-Lavender/11-1-88

Tape # _____

Transcr# _____

APPENDIX 2: HEADER FOR TRANSCRIPTION FILES

The following is a sample of a header file, designed to be inserted into the beginning of each transcription file (§4.2). (The lines containing the notation "words ..." are of course not part of the header file, but are given here merely to show where the text of the transcription is to placed.)

```
\PRINTOUT DATE;  
\TRANSCRIPTION TITLE;  
\FILENAME;  
\TRANSCRIPTION NUMBER;  
\TAPE NUMBER;  
\RECORDING DATE;  
\RECORDING LOCATION;  
\LANGUAGE AND DIALECT;  
\SPEAKERS;  
\TAPE SECTION TRANSCRIBED;  
\TRANSCRIBING CONVENTIONS;  
\DRAFT 1 BY;  
\DRAFT 1 DATE;  
\DRAFT 2 BY;  
\DRAFT 2 DATE;  
\DRAFT 3 BY;  
\DRAFT 3 DATE;  
\DRAFT n BY;  
\DRAFT n DATE;  
\STATUS (DRAFT/FINAL/APPROVED);  
\COMMENTS;  
\TEXT BEGINS;  
words ...  
words ...  
words ...  
words ...  
words ...  
words ...  
words ...  
words ...  
words ...  
\TEXT ENDS;
```

NOTES

1. This guide is based upon research supported by the National Science Foundation under grant No. IST85-19924 ("Information Transfer Constraints and Strategies in Natural Language Communication", John W. Du Bois, Principal Investigator). In the development of his ideas about transcribing, the first author acknowledges especially the influence of Wallace Chafe, Norman McQuown, and Emanuel Schegloff. We express our thanks to these and the many others from whom we have borrowed ideas -- while recognizing that undoubtedly they all would do things at least a little differently. Special thanks are due to Danae Paolino for assistance in compiling transcription examples. For their comments on and contributions to this document, we are grateful to Maria Luiza Braga, Wallace Chafe, Laurie Crain, Jane Edwards, Marie Iding, Christer Geisler, Marianne Mithun, Yoshi Ono, Danae Paolino, Emily Sityar, Sandra Thompson, and Gunnel Tottie; to the participants in the 1988 UC Santa Barbara transcribing seminar; and to the students in the first author's 1988 UC Santa Barbara course "Transcription and Analysis of Spoken Discourse".
2. Since our discourse research has focused on audio tape recordings, most of what we have to say is specifically oriented toward such records. The audible phenomena recorded in audiovisual records such as videotape or sound film can be transcribed using the conventions introduced below. But the visual phenomena raise important additional considerations, which we will not address here.
3. Recognizing that we have in general operated within the constraints imposed by audio records. Visible phenomena such as eye gaze, though clearly quite significant to language users, are inaccessible to the transcriber of audio tapes.
4. For conventions for indicating clause boundaries and other kinds of morphosyntactic coding, see §2.13.3 and Du Bois (forthcoming, b).
5. One could of course use the "non-aligned" system as the standard format for one's computer files, but substitute the more iconic "aligned" system for paper printouts and published examples. Such attractive displays could in most cases be generated automatically from the non-aligned format, using a simple computer program, thanks to the explicitness of the labeled bracketing system. Conversion in the other direction would seem more chancy.
6. We even attempt to introduce some standardization in the territory of "marginal words", where dictionaries have feared to tread (§2.6).

7. Such as the concordance program KWIC-MAGIC, a very useful program oriented toward the linguist's and discourse researcher's needs, which is available from Dr. LST: Software, 545 33rd St., Richmond, CA 94804-1535.

8. The examples given are from several of the American English conversational texts we have transcribed. The source for each example is given in abbreviated form within double parentheses, prefixed by "TRN_", following the example. The sources (with their short citation form) include:

"Door Story"	((TRN_DOOR))
"Farnsworth"	((TRN_FARN))
"Hypochondria"	((TRN_HYPO))
"Aesthetics and Advertising"	((TRN_AESTH))
"Depression Days"	((TRN_DEPR))
"Lunch"	((TRN_LUNCH))
"Ranchers"	((TRN_RANCH))
"Afrika"	((TRN_AFR))
"J & J"	((TRN_J&J))
"Car Sales"	((TRN_CARS))
(and others)	

(The transcription of "Aesthetics and Advertising" is available as Du Bois, Anderton, et al. forthcoming.) The examples are for the most part given as they appear in the latest versions of our transcriptions, except that due to typographical necessity, in a handful of cases an unusually long intonation unit had to be broken over two lines. (The use of heavy indentation for the second half of such intonation units should make it clear where this was done.) For brevity's sake we have presented mostly short stretches of discourse without a great deal of textual context (co-text), so that the portions cited are not always whole sentences. But every line that is cited is whole -- that is, each intonation unit is presented in its entirety -- and no omissions or modifications have been made within the stretch of transcription that is cited.

9. This somewhat crude (but cheap and easy) method gives an accuracy of perhaps ± 0.2 seconds, depending on the transcriber's reaction time to something as elusive as the end of a silence. More accurate methods are available, involving fairly simple instrumental analysis of the acoustic signal (e.g. measuring the flat stretches in an Oscillomink tracing or MacRecorder display of the waveform). While some researchers use subjective judgments of pause duration relativized to each speaker's current tempo (a "second" for a fast speaker is objectively shorter than a "second" for a slow speaker), we do not favor this, due to the difficulties in making such judgments reliably, and in interpreting the "time" notations which result.

10. If the actual duration of a very much lengthened word is deemed important, this can be indicated using the double parenthesis notation (§2.7); thus, uh=_(1.7) would indicate an utterance of the word uh that lasted 1.7 seconds. (An underscore symbol is used to link the word to its duration notation.)

11. A "grave accent" character is found on most microcomputer keyboards, but some printer fonts and computer screens make it look the same as the apostrophe. This is problematic for reading, though not for computer searching. In many cases the screen and printer problems can be remedied, however. If the user can control how these characters appear on screen and printer, it is advisable to make the apostrophe look like a right-hand single quote (raised comma), and to make the "grave accent" -- which indicates stress -- look like a raised vertical stroke (cf. Pullum and Ladusaw 1986).

12. This category is actually somewhat dubious from an intonational point of view; features like the sudden pitch movement could perhaps be indicated with angle brackets (§2.3). For those who might wish to dispense with the exclamation point as an intonational symbol, it becomes available for other uses.

13. A seeming exception occurs in the case of lines which contain only nonverbal elements such laughter and audible inhalation, which do not ordinarily carry an identifiable intonation contour. Such exclusively nonverbal lines are written without any intonation contour symbol at the end.

14. One reason for marking the truncation of intonation units overtly, rather than just leaving them with no punctuation symbol at the end, is to help ensure transcript reliability by encouraging transcribers to commit themselves to some statement regarding the intonation contour. Otherwise, the reader of the transcription will not know whether a missing punctuation symbol is due to the speaker's truncation or the transcriber's oversight.

15. Angle brackets are also used in several other notations which can apply to multi-word stretches of speech, including laughing while speaking (§2.5), uncertain hearing (§2.7), transcriber comments with specified scope (§2.7), and false start (§2.12).

16. If it is desired to ensure normalization of even uncompleted words, the (hypothesized) full form can be written out within double parentheses and flanked by single tildes fore and aft. Compare the following version of part of (18b):

so you 'can't s~_((~stand~)) .. 'ha~_((~have~)) ~~

While this makes the transcription harder to read, some researchers may find it advisable.

But forcing the normalization of uncompleted words may have undesired effects, including making it less immediately clear to the reader what words were actually said, and -- more significantly -- encouraging guessing as to what the speaker was about to say, and consequent analysis of the hypothesized words as though the speaker had actually fully uttered them. We have chosen the alternative of not introducing hypothesized full forms for the truncated words in the transcriptions, that is, we leave truncated words unnormalized. Since such words can be identified consistently by searching for the truncated word symbol (single tilde), normalization can still be reliably achieved for these few words at later stages of coding or analysis.

17. This linking is done so that the two representations will not be treated computationally as two distinct words.

18. As noted earlier, a sparing use of phonetic detail notations makes transcriptions easier to read, and, in some respects, to analyze with a computer (§1.3).

19. Neither the inhalation symbol (HH) nor exhalation symbol (HHx) is used within a word (e.g. for breathy voiced segments, laughter, etc.).

20. Some may perceive a resemblance between the @ symbol and the pervasive "smiley face" icon. Although laughter falls in the category of nonverbal vocal noises, and so could be written within single parentheses, it occurs so often that we have given it its own symbol, and have dispensed with the parentheses.

21. The material written within double parentheses can be freed somewhat from the ordinarily strict constraints on symbol usage, since it is not in general intended to represent actual speech. Nor is it expected, given its ad hoc nature, to be readily interpretable by computer searches.

Double parentheses are also used in the optional notations for phonetically transcribed words (§2.4) and the duration of extended laughter (§2.5) or notably lengthened words (§2.1).

22. For some kinds of computer analysis it is best to write comments with no spaces between the words, so that each comment will be treated as a single word-unit for sorting purposes (Du Bois, forthcoming b). If this constraint is adopted, the underline symbol can be used instead of spaces to separate the words of the comment.

23. This notation is sometimes useful for letting users of a tape know why a noise which, to the tape listener, appears very loud -- as noises from even minor microphone movements often do -- is not attended to by speech event participants (since it is not loud for them).

24. For certain kinds of computational processing, we find it useful to insert a semicolon as the first character of any line that does not contain a speaker code, so that each line contains exactly one semicolon, and the representation of spoken text (and related nonverbal phenomena, etc.) is always found to the right of it. This can be done automatically at the final pre-coding stage, and need not be part of the transcription per se.
25. This symbol is not used to indicate simple continuation of one speaker's utterance across successive (or separated) lines of text on the page.
26. In fact, the intonation subunit notation is sometimes seized upon as a compromise, in cases where one transcriber hears an intonation unit boundary, while another hears none.
27. Also, it follows any boundary markers (e.g. morphosyntactic boundary markers, §2.13.3) associated with the preceding subunit.
28. And, for English, such items as the pronoun I, etc.
29. Those who prefer to disregard the significance attached to the contrast between capitals and noncapitals are of course free to do so.
30. Briefly, the conventions are: plus (+) for group boundaries (e.g. noun phrase boundaries); ampersand (&) for backchannel and similar turns (e.g. lines containing just mhmm, laughter, etc.); sharp sign (#) for main clause boundaries; and curly brackets ({}) for embedded clause boundaries or parentheticals. For a full discussion of a morphosyntactic coding system which uses these symbols to represent constituent structure in a discourse data base, see Du Bois (forthcoming b).
31. For users who do not subscribe to intonation subunits and exclamatory intonation, the pipe (|) and exclamation point (!) also become available.
32. An outfit of equipment for transcribing which we have found useful includes a foot pedal-operated cassette player, like the Sanyo Memoscriber TRC 8070A; a set of "open" headphones, like the Sennheiser HD 420 SL, or the less expensive and lighter "walkman"-style headphones; an adapter to fit the stereo headphones to the mono cassette player; and, optionally, an inexpensive stopwatch.
33. A sample outfit of equipment which we have found useful for recording spoken discourse in natural conversational contexts includes the following: a small, high quality portable stereo cassette recorder (e.g. Sony TCD6-C); two small lavalier (lapel) microphones (e.g. Sony ECM-155), and/or a one-point stereo microphone (e.g. Sony ECM-939); a pair of inexpensive lightweight "walkman" style headphones; a small power transformer to allow

recording with AC (household) current when this is convenient; spare batteries (alkaline AA batteries for the tape recorder, size 675 hearing aid batteries for the microphones); blank 90-minute cassette tapes with labels and containers (e.g. TDK ZD-90); blank copies of speech event information forms (especially Quick Sheet and Speaker Sheet); blank copies of speaker release (consent) forms, if needed; pen or pencil; and a padded carrying case with shoulder strap to transport and protect all of the above (like those used for cameras, e.g. Tamrac 605R).

Substantially less expensive outfits may be adequate, as long as an external microphone is used. (Stereo is also worth having if one can afford it, because it makes it easier to hear overlapped speech, etc.) The internal microphone that comes with some tape recorders -- built into the tape recorder body -- should never be used. The sound nearest to it is always the whirring of the tape recorder's motor, which will come out inordinately loud on the tape, and reduce the sound quality of the tape. Even the most inexpensive external microphone invariably performs better, and is easily substituted.

34. One could argue on this basis that videotapes are to be preferred over audiotapes. For some research purposes this is no doubt true. But videotapes introduce problems of their own, not the least of which is a more cumbersome, stationary, single-perspectived, and intimidating apparatus, which may cause its objects to become more self-conscious. We believe that certain advantages of audio tape recordings, not the least of which is the unobtrusiveness with which they can be gathered, will continue to give them a central position in discourse research for a long time to come.

35. Also, the plastic safety tabs found on the edge of the cassette should be removed immediately, so that the cassette cannot be accidentally erased or recorded over.

36. In the bookkeeping (backslash) lines, the semicolon functions to mark the division between the label of a category and the information entered into that category.

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INDEX OF TRANSCRIPTION SYMBOLS

	<u>SYMBOL</u>	<u>GLOSS</u>	<u>PAGE</u>
(1)	...(n)	long (timed) pause	10
(2)	...	medium pause	11
(3)	..	very short pause; tempo lag	11
(4)	=	lengthened segment	13
(5)	"	primary stress	13
(6)	' [grave accent]	secondary stress	14
(7)	. [period]	final pitch contour	15
(8)	, [comma]	continuing pitch contour	16
(9)	?	rising question contour	17
(10)	!	exclamatory intonation	18
(11)	-- [2 tildes]	truncated intonation unit	18
(12)	<Y words Y>	marked quality, tempo, etc.	20
(13)	<P words P>	piano: decreased loudness	21
(14)	<MARC words MARC>	marcato	21
(15)	<Q words Q>	quotation	21
(16)	<Y<Z words Z>Y>	multiple marked features	22
(17)	%	glottal stop, glottalization	23
(18)	~ [tilde]	truncated (uncompleted) word	24
(19)	_(text)	phonetically transcribed words	25
(20)	(TEXT)	nonverbal vocal sound	25
(21)	(TSK)	click	26
(22)	(THROAT)	throat-clearing	26
(23)	(HH)	inhalation	26
(24)	(HHx)	exhalation	27
(25)	@	laugh	27
(26)	@==	extended laughter	28
(27)	@N	nasal laugh	28
(28)	<@ words @>, @word	laughing while speaking	28
(29)	uh	hesitation (filled pause)	30
(30)	<X words X>	uncertain hearing	30
(31)	X	indecipherable syllable	31
(32)	((COMMENT))	researcher's comment	31
(33)	A;	the speaker is A	33
(34)	[words n]	speech overlap	34
(35)	_____	overlap placeholder	35
(36)	(0)	latching	36
(37)	ZZZ	code for suppressed proper names	37
(38)	CARRIAGE RETURN	intonation unit boundary	37
(39)		intonation subunit boundary	38
(40)	SPACE	word boundary	39
(41)	Capital	"sentence" beginning	40
(42)	<FS words FS>	false start	41
(43)	\	bookkeeping line	43

Variation in the Intonation and Punctuation of Different Adverbial Clause Types in Spoken and Written English

Cecilia E. Ford
University of California, Santa Barbara

1. Introduction

A body of recent linguistic investigation has focused on differences between writing and speaking and on variation within each modality (Tannen 1982, Tannen 1984, Biber 1986, Chafe and Danielewicz 1985, Chafe and Tannen 1987)[1]. For Chafe in particular, the focus has been on understanding how writing reflects speaking and how patterns in both speaking and writing suggest general principles of thinking and communicating. The examination of English adverbial clauses has been especially fruitful (Beaman 1984, Chafe 1984, Thompson 1985, Ford and Thompson 1986). English adverbial clauses vary in their placement with regard to associated main clauses, and they also vary in their intonationally and orthographically signaled connections to main clauses. Chafe (1984) looked at adverbial clauses as a group in two data types: conversation and academic writing. In that study, Chafe found that clause complexes which are most tightly connected through intonation or punctuation (i.e., continuous intonation contours and and lack of separation through commas or periods) usually involve only one clause of "unfamiliar information". Thus, when adverbial clauses are more separated from their main clauses through

intonation or punctuation, each clause expresses unfamiliar information.

While Chafe examined differences in placement and intonational/orthographic boundness of adverbial clauses as a unified group, the present study concentrates on the question of boundness and looks at the variation in intonation and punctuation of different types of adverbial clauses, in particular temporal, conditional and causal clauses in final position, as they are well-represented in both the written and spoken data. Given that there is variation in the boundness of final adverbial clauses, the present study asks the question: is that variation associated with different clauses types?

2. Adverbial Clauses in Conversation

The first part of the present study comes out of a larger project in which I am looking at the functions of adverbial clauses in 13 transcribed English conversations between adults. In that corpus, there is variation in the patterns of intonational boundness that different adverbial clause types display with respect to their main clauses. The clause types found in the corpus are temporal (when, before, after, while, since, as), conditional (if), and causal (because, 'cause). Since causal clauses occur only finally in the corpus, I will focus here on the variation in intonational boundness of final adverbial clauses, clauses

which appear in the position associated with unfamiliar information (Chafe 1984).

Comparing clauses that follow continuing intonation or are parts of the same intonational contours as their main clauses ("bound") with clauses that follow final intonation ("separated"), it was observed that temporal clauses were more frequently bound than were conditional and causal clauses. Table I displays the frequencies of final adverbial clauses, bound and separated:

[Insert Table I about here]

In fact, a continuum of boundness was evident, moving from temporal through conditional to causal:

[Insert Figure I about here]

Thus, while temporal clauses do occur after final intonation, they do so less often than do conditional clauses. Temporal clauses follow final intonation 20% of the time while conditional clauses do so 40% of the time. Conditionals, in turn, occur less frequently following final intonation than do causal clauses, which follow final intonation 53% of the time.

In the following examples, punctuation is used to represent intonation. Periods and question marks represent final falling and high rising intonation, both considered final intonation. Commas represent continuing intonation [2]. The likelihood of final intonation before an adverbial

clause rises from temporals through conditionals, with causals being the most likely to be separated from main clauses by final intonation.

(1) Temporal Clauses

a. Bound: continuing intonation

(Talking about hearing a joke)

P: I gotta go to the john, before I hear that again.

[AD 1.8]

b. Separated: final intonation

A: Yeh W'l I'll give you a call then tomorrow. When I
get in or sum'n.

[TG 618]

(2) Conditional Clauses

a. Bound: continuing intonation

G: Ain't no sense in bein' dumb, if you can't show it
once 'nawhile.

[AD 6.11]

b. Separated: final intonation

S: ...it drips on the front of the CARS? (.)^{*} If you
park in a certain place?

[SN 460]

[* (.) = a very slight pause]

(3) Causal Clauses

a. Bound: continuing intonation

C: You don't like it, because you didn't think of it.

[AD 1.15]

b. Separated: final intonation

B: I went down to N.Y.U. to get it. Because it's the
only place that carries the book. [TG 306]

In addition to occurring more often after final intonation than other clause types, causal clauses are also more likely to involve pauses and disfluencies or to follow prompting from a listener, as in the following example:

(4)

A: Did you get ye:r (.) yer first pay check from it

[(.) at least?

→R: [NO: I won't get that for a couple weeks yet.=

→A: =Oh (.) [W'l

→R: [Cuz it takes a long time.=

A: =At least it's in the bank,

(0.5)

R: Yeah it will be.

[AR 193]

A asks a question to which he seems to expect an affirmative response (notice "at least" in the second line). R answers negatively and provides some explanation (first arrow), and A receives the answer with "Oh", a marker of surprise (second arrow). This prompts A to add more explanation to

his previous turn, introducing the explanation with cuz (third arrow). Thus, based on feedback from A, the recipient, R, has decided to add causal information. This kind of prompting from the listener is common in the context of causal clauses.

In terms of communication, the need for causal elaboration of an assertion seems to demand a higher degree of sensitivity to the listener, and thus, negotiation and disfluencies occur more often in the context of causal elaboration than in cases of temporal and conditional qualification. Conversely, temporal specification seems to be the most straightforwardly connected to its associated assertion; it is least likely to come after the previous utterance has been treated as complete intonationally. In cognitive terms, it may be that events and states are stored and retrieved in close association with their temporal grounding while their conditional and especially causal circumstances may be less immediately retrievable.

3. Adverbial Clauses in Freshman Writing

Given the continuum of boundness evident among adverbial clauses in conversational English, the question arises as to whether such a continuum is present in the signaling of connectedness in written English. Does punctuation differ according to adverbial clause type?

One study directly related to such questions is reported on in an article entitled, "How 'normal' speaking leads to 'erroneous' punctuating" (Danielewicz and Chafe 1985). In that study, "errors" in punctuation in freshman writing are explained by reference to strategies of spoken intonation. Since the common pattern in speech gives one clause one intonation unit, writers, using spoken prosody as a guide, may introduce punctuation where writing manuals suggest they should not. In the case of restrictive relative clauses, for example, standard writing manuals require that no punctuation separate a relative clause from its matrix clause. Since speakers may treat restrictive relatives as separate intonation units, transference to writing leads to erroneous inclusion of commas where none are allowed by orthographic convention (Danielewicz and Chafe 1985:219-20).

In the second part of the present study, based on the variation in intonation of adverbial clauses in my spoken corpus, I examine the writing exams of 131 entering freshmen at UC Santa Barbara to see if they display variation in the punctuation of adverbial clauses. This data base was chosen for two reasons. First, it was produced by individuals of approximately the same age as the speakers in the conversational data. In the conversational data, the majority of speakers are college students. Second, since these compositions were produced under pressure and at one sitting, it is assumed that they reflect a minimum of

editing. Compositions produced for writing courses would have been subject to more editing and revision. It was assumed that exam-based data would be less affected by standard rules of punctuation and more likely to show similarity in punctuation patterns to patterns of spoken intonation.

There was a wider variety of adverbial clause types in the written data than in the spoken data [3]. Surface conjunctions were also more varied: temporals included the same conjunctions as the spoken data plus during and until; unless was an additional conditional conjunction; and causals also included since.

In order to determine whether these writers varied their punctuation along the same continuum as the conversationalist in my spoken corpus, I needed to determine what inventory of orthographic devices was used to signal separation or boundness in these essays. Adverbial clauses were connected to their main clauses across four different types of punctuation: zero, comma, period, and dash. However, only a handful of clauses were connected to main clauses across periods and dashes; most commonly, the connection was marked either by a comma or by no punctuation. This pattern is not surprising since, by this point in their education, most students will be familiar with the rule that clauses introduced by adverbial

conjunctions may not be punctuated as independent sentences. If the writers were restrained in their use of periods, that left them with the option of using commas as a main device for introducing separation between clauses.

To measure variation in the orthographic signaling of separation or boundness, I considered any non-zero punctuation to be a mark of separation. Taking, then, the cases marked by no punctuation to be bound and cases marked by commas, periods, or dashes to be separated, results analogous to the results for the spoken data were found.

[Insert Table II about here]

As can be seen from Table II, a continuum is present in the punctuation of final adverbial clauses by freshman writers.

[Insert Figure II about here]

While the proportion of adverbial clauses that are separated is smaller, the tendency is the same: temporal clauses are separated from their main clauses only 3% of the time (only one case) while causal clauses are separated 25% of the time, with conditionals falling between the two, being separated 17% of the time.

In the following examples, then, the likelihood of separation through punctuation goes up from temporals through conditionals, with causals being the most likely to be separated from their main clauses by some form of punctuation. (The compositions were based on short readings

on medical malpractice and the ethical questions of national survival. I reproduce the students' writing with all its original features, from spelling to logic!)

(5) Temporal Clauses

a. Bound: no punctuation between clauses

These baby adults will need support until they can fend for themselves. [AB A]

b. Separated: punctuation between clauses [4]

I feel the protection of our continent and hemisphere is needed -- only after the people in our country are safe from hunger, homelessness, and unemployment. [CAV A]

(6) Conditional Clauses

a. Bound: no punctuation between clauses

His central theme states that posterity will only be satisfied if man governs his own life only. [BEN A]

b. Separated: punctuation between clauses

...the patient could be in severe trouble physically and financially, if injury occurred. [HER A]

(7) Causal Clauses

a. Bound: no punctuation between clauses

There would be quite a few students who benefit from this, but still many others could not relate to this teacher because he taught over there heads. [BOZ A]

b. Separated: punctuation between clauses

Medical malpractice is a crucial error, because it is committed through negligence. [CHA B]

Interestingly, cases of final adverbial clauses punctuated as separate sentences or fragments (i.e., capital on the conjunction and period at the end of the clause) occurred only with causals (n=3) and conditionals (n=1). This is additional support for a continuum of boundness which predicts that causals and then conditionals are more likely to be separated from their main clauses than are temporals, periods being signs of greater separation than commas.

(8) Causal Fragment

I agree with Kussman on the ground that the price for malpractice should not be a set amount. Because all injuries vary in there degree of seriousness. [PRY B]

(9) Conditional Fragment

I don't know of anyway a doctor can injure a patient except through negligence. Unless, the equipment being used by the doctor malfunctions to cause an injury.

[SCHN B]

It is worth noting that in English writing handbooks, the guidelines for punctuating final adverbial clauses vary. While some manuals allow for case-by-case judgments, others strictly forbid the separation of final adverbial clauses from their main clauses. According to The Portable English Handbook, a writer must determine whether a clause is "essential to the meaning of the sentence" (Herman 1978:110). If the meaning is essential, there should be no comma. Likewise, The Random House Handbook asks the writer to decide whether the clause "adds something new," in which case a comma is necessary (Crews 1984:318). It is revealing to look at the examples used to illustrate clauses that present "essential" versus "new" meaning. Both Herman and Crews use "until", a temporal conjunction, to exemplify "essential" information.

I will keep knocking until they open the door.

(Herman 1978:111)

An apple a day was all Betsy allowed herself until the diet was completed.

(Crews 1984:318)

Neither handbook uses a temporal clause to illustrate the adding of something "new". Instead, Herman uses although and Crews uses a restrictive relative clause (his treatment covers more than adverbial clauses). Judging from the clauses used to illustrate the conception of "new" versus "essential", then, both handbooks seem to recognize implicitly something prototypically essential about temporal clauses.

In contrast to the Herman and Crews manuals, The McGraw-Hill College Handbook states its rule unambiguously, allowing for no variation:

Do not use commas to set off dependent adverbial clauses that come at the end of a sentence.

(Marius and Wiener 1985:387)

By this rule, our college writers have punctuated final adverbials erroneously in 24 cases, and they make this mistake most often with causal adverbials. On the other hand, if Herman or Crews is considered the guide, then it seems these beginning college writers treat temporal clauses as essential to the main clause meaning more often than they treat conditionals and causals as such.

The fact that there is inconsistency and vagueness in the rules for punctuating final adverbial clauses is certainly related to the kind of variation we see in the treatment of such clauses in both speech and writing. Furthermore, while no straightforward prediction can be made regarding the intonation or punctuation of different types of adverbial clauses, there does seem to be an association between the type of adverbial connection being made and the likelihood that the adverbial clause will be either bound to or separated from the main clause. Speakers and writers are both more likely to treat causal clauses as separate than they are to treat temporal clauses as such. As suggested in the discussion of adverbial clauses in the spoken data, both cognitively and communicatively, temporal clauses seem to be more closely connected to their main clauses than are conditionals and causals. That this continuum of connectedness is evident in both speaking and writing makes the case even stronger.

4. Related Findings

A continuum of connectedness in the intonation and punctuation of adverbial clauses in English converges with other findings based on cross-linguistic data as well as on English. In her cross-linguistic study of morphology, Bybee (1985) found that both in their relative order in relation to verbs and in their likelihood to be fused to verbs, tense and aspect markers ranked higher than markers of mood. This

suggests that just as English speakers tend to treat temporal clauses as more essential to main clause meaning than conditional clauses, as demonstrated in the differential patterns of intonation and punctuation, there is cross-linguistic evidence that temporal information in the form of verb morphology is treated as part of a verb more often than information involving mood, the relevant category here being conditional or hypothetical modality. Silverstein (1976) and Foley and Van Valin (1984) have found cross-linguistic evidence that temporal clauses are more closely connected to their main clauses than are conditional clauses. Among temporal as opposed to conditional clauses, there is a greater likelihood of reduction of the subordinate clause or incorporation of the clause into the main clause. The cross-linguistic findings of all three of these studies match nicely with the continuum found here with respect to the intonationally and orthographically signaled connectedness of English adverbial clauses and their main clauses, temporals being less frequently separated than conditionals.

In addition to the cross-linguistic support for a continuum of connectedness differentiating temporal and conditional information, there are findings with regard to English which suggest that because is a special case among adverbial conjunctions. Based on data from conversational English, Schiffrin (in press) examines "discourse markers", which she

defines as "linguistic elements which bracket utterances", words which "help build discourse structure, organize textual information, and construct conversations." She looks only at the utterance-initial uses of such markers as and, but, well, and so; and the only adverbial conjunction considered in her study is because. Schiffrin distinguishes utterance-internal uses of because from discourse organizational uses of the conjunction. Discourse organizational uses are those which follow falling intonation and which, were they to appear in written English, would be "considered sentence-fragments and in need of revision" (in press:46). That a major study such as Schiffrin's, which examines the discourse work of sentence initial linguistic units, includes uses of because that would be traditionally categorized as fragments is further support for the different status of because relative to other adverbial clauses in English language usage.

A differentiation of causal clauses from conditional and temporal clauses in English is also noted in a study by Lakoff (1984). Lakoff observes that final causal clauses may take a wider range of constructions than final conditionals and temporals. Final causal clauses may

involve sentence types usually associated with main clauses, such as inverted exclamations,

I'm gonna have breakfast now, because am I ever hungry!

(1984:474)

and rhetorical questions,

The Knicks are going to win, because who on earth can stop Bernard?

(1984:474)

However, Lakoff finds the same constructions unacceptable with adverbial conjunctions such as if:

*I'm gonna have breakfast now, if am I ever hungry!

*The Knicks are going to win, if who on earth can stop Bernard?

(1984:474)

Lakoff's judgements indicate yet another way in which because-clauses are more independent from their main clauses than are conditional and temporal clauses. Again, the continuum of boundness suggested by the present study is supported.

5. Summary and Conclusion

This paper has reported on variation in the intonation associated with different adverbial clause types in spontaneous spoken English. With those findings as a base, a comparison has been made between the intonation of different adverbial clauses in spoken English and the punctuation of such clauses in a sample of written English. The written data consisted of freshman composition exams. These were selected because they represent relatively unedited, low-level writing. It was expected that these data would be most likely to display variation in the punctuation of adverbial clauses. The results show consistency in the signaling of connectedness of clauses in speaking and writing. Temporal clauses in both genres are the most tightly bound to their main clauses. This suggests that there is a greater connectedness of temporal qualification to associated assertions both cognitively and communicatively. Speakers and writers both present temporal qualification more frequently as closely bound to the clauses it modifies. Conditional and especially causal clauses show a lower frequency of intonational and orthographic connectedness to their main clauses as compared with temporal clauses. Findings from other studies support the notion of a continuum of connectedness as found in the present research, with temporal information most closely tied to its associated modified material and causal information characteristically more separate.

While the consistencies in the continuum across modalities may be viewed as resulting from a transference of spoken strategies to writing, they may also reflect general cognitive and communicative constraints. It may be that temporal qualification is more essential to the meaning of an assertion both in terms of how it is organized cognitively and in how it is presented to a listener/hearer. To understand and communicate information about an event or state, we seem to treat its temporal grounding as more crucial than its conditional or causal circumstances. This then may be mapped directly onto the system of signaling connection, be it punctuation or intonation.

[1] I thank Sheridan Blau for giving me access to the written data for this study, Marta Navarro for help in organizing the data, and both Wallace Chafe and Sandra Thompson for comments on an earlier version of the paper. Responsibility for form and content is entirely my own.

[2] While comma always represents a contrast with final falling and high rising intonation, there is variation in the degree to which the onset of the following clause is either rushed into or delayed.

[3] The written corpus included concessives (although, even though, and while). These will not be covered here as there

are no data from the spoken corpus with which to compare them.

[4] This is the only case of a separated temporal clause in the written corpus.

Table I
Final Adverbial Clause Intonation

	Temporal	Conditional	Causal	Totals
Bound	(80%) 32	(60%) 12	(47%) 36	(59%) 80
Separated	(20%) 8	(40%) 8	(53%) 39	(41%) 55
Totals	(100%) 40	(100%) 20	(100%) 75	(100%) 135

($\chi^2 = 13.7$, 2 d.f., $p < .005$)

Figure I
Continuum of Boundness of Spoken Adverbial Clauses

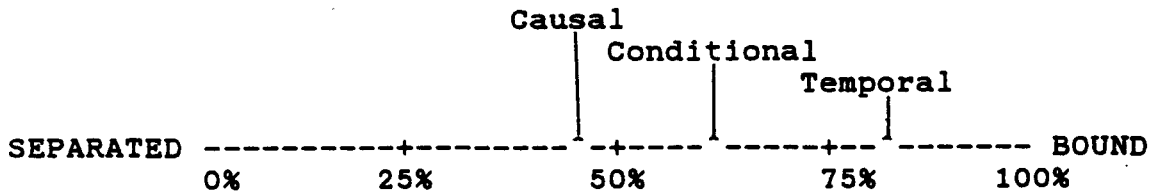
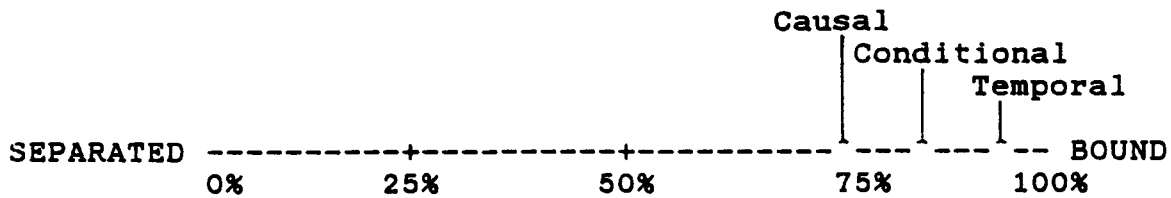


Table II
Final Adverbial Clause Punctuation

	Temporal	Conditional	Causal	Totals
Bound	(97%) 37	(83%) 44	(75%) 43	(84%) 124
Separated	(3%) 1	(17%) 9	(25%) 14	(16%) 24
Totals	(100%) 38	(100%) 53	(100%) 57	(100%) 148

($\chi^2 = 8.1, 2 \text{ d.f.}, p < .025$)

Figure II
Continuum of Boundness of Written Adverbial Clauses



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DEFINITE AND INDEFINITE NOUN PHRASES IN TURKISH: A DISCOURSE STUDY

Abigail Kaun
University of California, Santa Barbara

I. INTRODUCTION

This paper examines the distribution of definite and indefinite full noun phrases in Turkish, using data from spoken narratives and an elementary children's book. I have taken a discourse-based approach and will call on the notion of information flow status in an effort to characterize and explain speakers' choice of definite or indefinite morphology when faced with an "option." Finally, I will discuss the distribution of these noun phrases in subject position with respect to the grammar and semantics of the verbs they govern.

II. THE MORPHOLOGY

Indefiniteness is marked on singular full noun phrases by the morpheme *bir*, literally 'one,' as in :

(1) *bir* *baykuş* *yaş -ıyor -du.*
INDEF owl live -PROG-PST
'an owl was living' (CK84)

(2) *Can* *bir* *sincap* *gör-dü*
INDEF squirrel see-PST
'Can saw a squirrel.' (OR10)

Definite noun phrases are not marked:

(3) *ve* *baykuş* *bayağı* *kız* *-dı bu iş -e.*
and owl pretty.well get.angry-PST this thing-DAT
'And the owl got pretty angry about this.' (CK86)

Plural noun phrases can not be marked morphologically for definiteness, so they will not be considered in this study. Further discussion of noun phrases which were eliminated from my database will be given in Section IV.

It is interesting to note that the indefinite marker *bir* generally follows adjectives; the construct ADJ *bir* N occurs frequently in my data. An example of this follows:

(4) .. *küçük* *bir* *çocuk* *var,*
little INDEF child EXIST (CK6)
'There is a little boy.'

non-referential. Other non-referential noun phrases have also been disregarded, such as the following temporal expressions:

- (7) .. **gece** vakti kurbağa kavanoz-dan,
 night during frog jar -ABL (CK12)

'During the night the frog came out of the jar...'

- (8) .. **sabah** ol -uyor
 morning be-PROG (CK14)

'It is morning.'

(In context this is better translated 'in the morning...')

In addition, vocative noun phrases have been eliminated because the speaker does not have the option of coding them as indefinite:

- (9) ..**kurbağa**, [MOCK SHOUTED]
 frog (CK25)

- ..**nerde** -de -sin, [MOCK SHOUTED]
 where-LOC-2.SG (CK26)

'Frog! Where are you?'

Finally, Turkish allows a construct with a non-finite verb bearing a dative suffix. These typically involve a verb with the infinitive suffix *-mek* and the dative suffix *-e* followed by a verb such as *başlamak*, 'to begin', in a finite form. An example of this follows:

- (10) ... çocuk,
 child (OE36)

- .. kurbağa-s -i -n -i
 frog -EP-IZ-EP-ACC (OE37)

- .. **ara** -ma -ya **başla**-dı
 search-INFIN-DAT begin-PST (OE38)

'The child began to search for his frog.'

I am unsure how to handle these cases . In the present work I have discarded these

deverbalized forms, for it appears to me that indefinite marking cannot occur in these constructs.

Therefore, only referential noun phrases on which both definite and indefinite marking are allowed have been considered here.

V. HYPOTHESIS

I propose that Turkish definite noun phrases are used to code Identifiable information, whereas indefinite noun phrases are used to code Non-identifiable information. Furthermore, I claim that the Given A Constraint (Du Bois 1987) is operative, in that Non-identifiable ("New") noun phrases will not occur as the subject of transitive verbs.

The term "Identifiable" unites Ellen Prince's (Prince, 1981) categories "Brand New-Anchored," "New-Unused," "Inferable" and "Evoked." These will be treated in more detail below in the context of their application to this study, but by way of background, the least controversial of these classifications is the Evoked status. A noun phrase is Evoked if it has been mentioned previously in the discourse. A noun phrase can also be "Situationally Evoked," a category to which I will also return later. The other categories involve noun phrases which have not been previously mentioned, but which the speaker assumes the hearer can identify, either by shared knowledge, or by association with a previously mentioned phrase or by shared (cultural) understanding of the nature of the world. The collective notion Identifiable then refers to noun phrases which the speaker believes the hearer can identify through some means.

VI. RESULTS

VI.1 SPOKEN

The results of this study strongly support the hypothesis stated above. In the spoken sample 151 noun phrases were considered. Of these, 121 were definite and 30 were indefinite. The following table shows their distribution with respect to identifiability. A Chi-square test was run, indicating that these results are statistically significant:

TABLE 1:

	DEFINITE	INDEFINITE
IDENTIFIABLE	115	2
NON-IDENTIFIABLE	6	26

CHI-SQUARE = 108.45
P = .001

VI.2 WRITTEN

The written sample also strongly supports the hypothesis that indefinite noun phrases code Non-identifiable information and definite noun phrases, Identifiable information. 49 noun phrases were considered, 43 definite and 6 indefinite. Their distribution in terms of information flow status is given here in Table 2 and again, a Chi-square test was run showing these results to be highly significant:

TABLE 2:

	DEFINITE	INDEFINITE
IDENTIFIABLE	41	0
NON-IDENTIFIABLE	2	6

CHI-SQUARE = 28.408
P = .001

Cases in which noun phrases were considered Identifiable without having been mentioned previously are discussed in section VII and apparent violations of the Identifiability hypothesis will be discussed below in section VIII. In section IX the issue of indefinite noun phrases as subjects will be addressed, but at this point I will note that of the 36 indefinite noun phrases observed here, none appeared as the subject of a transitive verb, as predicted by the hypothesis.

VI. FIRST MENTION IDENTIFIABLE NOUN PHRASES

The majority of identifiable noun phrases in both the spoken and written data were previously mentioned in the discourse (80.87 % in the spoken sample and 63.41% in the written sample). Of those which were not, however, the majority were Brand New-Anchored. Following Prince (1981) I am using this term to refer to noun phrases which are Identifiable by possessive association with an Identifiable (usually previously mentioned) noun phrase. (A noun phrase occurring in a relative clause, where the head noun is identifiable, would also be considered Brand New-Anchored, though no such cases occurred in my data.) The following sequence consists of one Non-identifiable noun phrase followed by two Brand New-Anchored noun phrases:

- (11) ..bir küçük çocuk,
 INDEF little child

'A little child'

(OE2)

- (12) ... köpeğ -i -y -le ve,
 dog -IZ-EP-COM with

'with his dog and'

(OE3)

- (13) .. uh kurbağa-s -t -y -la oyn-uyor.
 frog -EP-IZ-EP-COM play-PROG (OE4)

'With his frog was playing'

The noun phrases *köpeğiyle*, 'his dog', and *kurbaçasıyla*, 'his frog', are anchored to the noun phrase *çocuk*, 'child', which, having been introduced in (11), is identifiable in (12) and (13). Another example of anchoring follows:

- (14) ah= bak köpek,
 look dog (CK21)

kafa -s -t -n -t kavanoz-a sıkıştır-dı
 head-EP-IZ-EP-ACC jar -DAT squeeze -PST (CK22)

'Ah look! The dog squeezed his head into a jar.'

This sequence includes three noun phrases. *köpek*, 'the dog,' is identifiable through previous mention. To it is anchored the noun phrase *kafası* literally 'his head-ACC.' Also previously mentioned is *kavanoz*, 'jar.' In these examples, the noun phrases which I've viewed as being Brand New-Anchored can be identified by the hearer, that is the speaker does not anticipate a response such as "What dog?," "What frog?" or "Whose head?"

The written sample contains 9 Brand New-Anchored noun phrases. In the following example, *Candan* (a female given name) is Evoked (previously mentioned) and the jump rope is anchored to *Candan*:

- (15) Candan ip -i -n -i al -dı
 rope-IZ-EP-ACC take-PST

'Candan took her jump rope.' (OR3)

One identifiable noun phrase from the spoken data can be classified as New-Unused. I am using this category to refer to noun phrases which the speaker assumes to be in the "hearer's model" (Prince 1981), i.e. known by the hearer prior to the discourse:

- (16) pencere-den de ay gör-ün -üyor-du
 window -ABL and moon see-PASS-PROG-PST (OE5)

'and you could see the moon through the window.'

This is an interesting case. Both the noun phrases *ay*, 'moon' and *pencere*, 'window' are first mentions and both are morphologically definite. I would argue that *ay*, 'moon', is unquestionably New-Unused. Our planet has only one lunar satellite, the referent of which the speaker can assume the hearer is aware. *pencere*, 'window,' is less clear-cut. We know that the participants are in a house during this section of the narrative, and houses have windows. In that sense, *pencere* can be thought of as Inferrable. Again, the speaker does not expect a "What window?" response. Our

knowledge of the house, however, comes not from the discourse but rather from the situation; from the picture we know that the participants are in a house. For this reason, I prefer not to call *pencere* "Inferrable." Instead I will call it Situationally Evoked, a notion to which I will return below.

Although I have not chosen to label *pencere* as Inferrable, the spoken transcripts do contain several inferrable noun phrases. Again, Following Prince, I use this term to refer to information which the speaker assumes the hearer can infer from the linguistic context of the discourse. An example of this is given here:

- (17) .. çocuk-la
child-COM (CK140)
- ... kurbağa,
frog (CK141)
- .. ve köpek,
and dog (CK142)
- ev -e dön -üyor-lar
house-DAT return-PROG-PL (CK143)

'The child, the frog and the dog return home.'

In this example the noun phrase *ev* 'to the house,' is Inferrable, that is the hearer can infer that its referent is the house where the participants live.

From the written data we have the following:

- (18) Can dere -y -e doğru koş-tu.
stream-EP-DAT straight run-PST (OR35)
- tabağı -n -a su dol -dur -du.
dish -IZ-EP-DAT water fill-CAUS-PST (OR36)

'Can ran straight to the stream. He filled his dish with water.'

From this sequence I would like to focus on the noun phrase *su*, 'water.' (*dereye*, 'stream-DAT,' is a problem which I will discuss in more detail below.) *su* is a first mention, but its referent can be inferred from the preceding noun phrase *dereye*, since streams have water.

VIII. PROBLEMS FOR THE HYPOTHESIS

As seen in Table 1, my spoken data include 6 Non-identifiable definite noun phrases. This poses a problem for the hypothesis as stated thus far. Having examined these apparent counterexamples, however, I have isolated a pattern which conforms nicely to assumptions and observations made by linguists in earlier discourse studies. In all cases, the "Non-identifiable" noun phrases marked as definite could be viewed as being Situationally Evoked (a term taken from Prince (1981)). By this I mean that strictly in terms of linguistic context, these noun phrases must be viewed as being Non-identifiable. In terms of their extra-linguistic context, however, they can be

identified. As was mentioned at the beginning of this paper, my spoken data were elicited in the following manner. The subjects were given a picture-book and were asked to tell the story. Thus the narratives are artificial in the sense that they were not produced in an interactive context. For this reason, I cannot attribute phenomena from the discourse to situational factors without some justification. Thus I propose the following explanation.

It seems reasonable that a certain mode of communication can be said to exist, I'll call it Story-Book mode, in which a speaker (usually an adult) tells a story to a hearer (usually a child) and both participants examine the book throughout the discourse. If such a mode exists, it then seems reasonable to imagine that my subjects adopted this mode as they told their versions of the story. It turns out that all of my counterexamples can be viewed as Situationally Evoked, if we assume the speakers to have been in Story-Book mode during performance of the discourse. For example, *yar* 'cliff,' in the following example, must be counted as Non-identifiable with respect to the criteria given thus far since it is not Evoked, it is not Brand New-Anchored and it is not Inferrable:

(19) .. *geyik* *çocuğ-u* *brak-tı* *yar -dan* *aşağı-ya*
 deer child-ACC leave-PST cliff-ABL below-DAT(CK112)

'The deer dropped the child down off the cliff.'

If, however, we project Story-Book mode on the speaker at the time of utterance, it can be claimed that the speaker assumes that the (hypothetical) hearer can see the picture of a cliff accompanying that portion of the discourse. The cliff then is no mystery, and can be said to be Situationally Evoked. I would like to suggest that *pencere*, from example (16) should be thought of in the same manner. The picture being regarded during the utterance depicts a window, so *pencere* may also be considered Situationally Evoked.

The written sample includes two "Non-identifiable" definite noun phrases which can be thought of in the same way. Because the pictures accompany the text, noun phrases which in the absence of illustrations would probably have been introduced linguistically with indefinite noun phrases are here introduced visually. *dereye* 'to the stream', given in example (18) is one such noun phrase. Thus I would like to suggest that illustrations in written text are analogous to illustrations associated with Story-Book mode.

So if we extend our notion of Identifiable to include Situational Evokation, the hypothesis put forth in this study is further strengthened.

In the spoken data one noun phrase is indefinite and Non-identifiable:

(20) ... *kocaman* *bir* *orman*
 huge INDEF forest (CK41)

'a huge forest'

This noun phrase is previously mentioned (CK35) and thus Identifiable. I have no explanation for why it occurs with indefinite morphology.

The CK transcript also contains one interesting case in which an indefinite noun phrase should be interpreted as being Brand New-Anchored. *köpeğ* below is marked as being possessed by a third person possessor (the little boy). This is given in the

following example:

(21) ... küçük bir çocuk var,
little INDEF child EXIST (CK6)

.. bir köpeğ-i var,
INDEF frog-IZ EXIST (CK7)

'There's a little boy, (there's) his dog...'

This surely seems to violate the hypothesis put forth here. One explanation for this apparent counterexample could be that this clause is produced during a presentative section of the narrative. The speaker may have been using indefinite morphology in spite of the fact that the noun phrase *köpeğ-i* was technically identifiable because of the strong tendency to use indefinite noun phrases to introduce new participants into the discourse.

IX. INDEFINITE NOUN PHRASES AS "SUBJECTS"

My data comply with the Given A Constraint (Du Bois 1987), which states that new (Non-identifiable, for the purposes of this study) information tends not to occur in the A role, i.e. as the subject of a transitive verb. In fact, my data include no instance of an indefinite noun phrase governing a transitive verb. Du Bois claims also that speakers use intransitive verbs to introduce human participants into the discourse. If we modify this to include animals, which are as much participants in *Frog, Where Are You?* as is the little boy, we find that intransitive verbs governed by Non-identifiable noun phrases are indeed serving to introduce the referent of that noun phrase into the discourse. Du Bois notes further that these verbs tend either to be "semantically empty verbs," such as existentials, or "relatively neutral verbs like 'come' and 'arrive.'" This holds true for my data. The existential verb *var* is used in this context, as are the neutral verbs *yaşmak* 'to live' and *uçmak* 'to fly' (semantically neutral when governed by a noun phrase such as *bir sürü arı* 'a swarm of bees'). Consider these intonation units taken from the CK transcript:

(22) .. küçü bir çocuk var
INDEF child EXIST (CK6)

'There's a little boy,'

.. bir sürü arı,
INDEF flock bee (CK45)

.. uç-uyor-lar,
fly-PROG-PL (CK46)

'A swarm of bees was flying'

(24) bir baykuş yaşıyor-du
INDEF owl live-PROG-PST

(CK84)

'An owl was living'

In this final example I have only given the second part of a relatively long intonation unit. In these examples the intransitive clauses all serve to introduce the referent of the Non-identifiable noun phrase which they contain.

In the written data I have no instances in which a Non-identifiable noun phrase occurs as the subject of any verb, transitive or intransitive. I am not in a position to make any claims about the implication of this fact without first examining more written data of a less elementary nature.

X. CONCLUSIONS

I have shown that the distribution of definite and indefinite noun phrases can be described in terms of information flow status. Definite noun phrases code Identifiable information while indefinite noun phrases code Non-identifiable information. This tendency was shown by Charlotte Linde (1981) to be present in English spoken discourse. I have also suggested that the notion of Situational Evocation can be extended beyond a purely interactive context through Story-Book mode and picture-books. I have shown that the Given A Constraint appears to be operative in my data; New (Non-identifiable) information is not coded as the subject of a transitive verb. In addition, we have seen several instances in which "neutral" intransitive verbs serve to introduce new participants (coded by indefinite noun phrases) into the discourse. This of course is not the end of the story with respect to definiteness in Turkish discourse. Data from other types of discourse must be examined, particularly conversations and written samples somewhat more sophisticated than those analysed here. The findings in this work, however, are consistent with earlier research on information flow and can be seen as the first step toward a study of anaphora and participant tracking in Turkish.

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Acknowledgements

I would like to express my gratitude to Ömer Eğecioğlu, Çetin Koç, Mack Thompson

and Sandra Thompson for their suggestions, guidance, intuitions and patience throughout my preparation of this study.

te , i , and ru Clauses in Japanese Tofu Recipes: A Quantitative Study*

Tsuyoshi Ono
University of California, Santa Barbara

Introduction

The purpose of this paper is to investigate the functional differences among three kinds of clauses in Japanese through a quantitative text analysis. A cook book was used as the data and statistical analyses were performed. The results suggest that the choice of the clause type is strongly correlated with the continuity between the situation expressed in that clause and the situation expressed in the following clause.[1]

Japanese has two kinds of nonfinite clauses which are used to link clauses in a so-called "clause linking" construction. One is identified by a verbal suffix -i (hereafter, the i-clause). The other is identified by another verbal suffix -te (hereafter, the te-clause).[2] Let's look at the following examples:

- (1) onaka ga suki , EMU de gohan o taberu.
stomach SUB become:empty:I EMU LOC meal DO eat:RU
'(I) become hungry and eat a meal at the EMU.'
- (2) onaka ga suite , EMU de gohan o taberu.
stomach SUB become:empty:TE EMU LOC meal DO eat:RU
'(I) become hungry and eat a meal at the EMU.'

As the translation might indicate, there is no clear semantic difference between them. Inoue (1983) suggests a difference in formality, namely that i-clause is more formal and te-clause is less formal. However, as Inoue herself notes, both can occur in a single text which is consistent in formality.

It is also possible to use the finite form of the verb in the first clause of each example above, as follows:

- (3) onaka ga suku. EMU de gohan o taberu.
stomach SUB become:empty:RU EMU LOC meal DO eat:RU
'(I) become hungry.' '(I) eat a meal at the EMU.'

We now have two separate sentences. Except perhaps for weak pragmatic inference, there is no formal indication that the two situations are somehow taken as related, as in (1) or (2). I call this type of clause the ru-

clause because all the cases of this type in my data took the nonpast form, -i or (r)u.

The hypothesis which I will test in the present study is:

- (4) The te-clause, the i-clause and the ru-clause can be aligned on a scale indicating continuity between the two situations expressed in that clause and the following clause as follows:

te-clause > i-clause > ru-clause

That is, the te-clause indicates the highest continuity, the ru-clause indicates the lowest continuity and the i-clause is intermediate between them.

This hypothesis is based on the following observations. First, as we saw above, the semantics of -i and -te indicates that the two situations of the i-clause or te-clause and the following clause are somehow related, whereas this is not the case with the ru-clause.

Second, an experimental study conducted by Saul (1986) showed that subjects tended to connect clauses with the i-clause or the te-clause rather than with the finite clause (i.e., the ru-clause in our case) when they were asked to tell a story by looking at pictures which described thematically related situations. When the subjects looked at pictures with a strong thematic break among them, they tended to use the finite form of the verb at the break. This observation can be nicely explained by the present hypothesis: the ru-clause is a form for high discontinuity between the situation of the present clause and the one of the following clause whereas the other two are forms for high continuity.

Third, Tamori (1977) claims that semantically the te-clause has the meanings of causal relation, concession, manner, instrument, etc., whereas the i-clause lacked these meanings except by weak inference, and that, syntactically, the te-clause had a subordinate nature and the i-clause had a coordinate nature. Kuno (1973a and b) and Inoue (1983) have made similar observations. All of these studies were based on imagined examples or examples arbitrarily selected from discourse. It would not be very difficult to find other examples in actual texts which do not agree with their claims as to a distinct semantic difference between the two clause types. Nevertheless, these claims reflect an intuition that the te-clause is a grammatical form for a high continuity with the following clause.

Fourth, according to Kuno (1973a and b), the two situations of the te-clause and the following clause must be either both "self-controllable" or both "non-self-controllable", while such a constraint does not hold for the i-clause. Again, it would not be very difficult to find counterexamples to this claim in actual texts. Nevertheless, this analysis also conforms to the

present hypothesis: only the te-clause appears to have some sort of semantic restriction with the following clause.

Fifth, comparing the i-clause and the te-clause in texts, Hinds (1976) claims that if the subject matter changes from one clause to the next, the i-clause must be used. It is rather difficult to tell what he means by "the subject matter" and his data in fact show counterexamples to what he apparently claimed. Nevertheless, this finding is compatible with my hypothesis: the i-clause, but not the te-clause, is used in the environment of a high discontinuity with the following clause.

Sixth, Myhill and Hibiya's quantitative study of clause combining in a novel (in press) shows that 82.0% (41 out of 50) of the te-clauses in their data have the same subject with the following clause whereas 71.3% (87 out of 122) of the i-clauses have the same subject with the following clause. Although my own computation of the Chi-square test with Yates' correction on these figures indicates that the association between the sameness of subject and the choice of the clause type is not statistically significant, this again shows the same direction specified in the hypothesis: the te-clause is more likely to appear in the environment of high continuity than the i-clause.

Finally, diachronic considerations also support the hypothesis: one finds that the verb in the clause following the te-clause tends to grammaticize to an auxiliary, indicating notions such as tense, aspect, direction, etc., whereas this is not the case with the other two types.[3] Let's look at some examples:

- (5) pai o tabete , shimatta.
 pie DO eat:TE SHIMAT:PST
 '(I) ate (some) pie and put away (the rest).'
 '(I) finished eating (or have eaten) (some) pie.'
 '(I) ate (some) pie unconsciously.'
 '(I) ate (some) pie (without realizing I should no have).'

- (6) pai o tabe , shimatta.
 pie DO eat:I SHIMAT:PST
 '(I) ate (some) pie and put away (the rest).'

There is one interpretation common to (5) and (6). It denotes two situations: eating and putting away. The second verb shimat is used as an independent verb with its lexical meaning 'to put away'. (5), however, has other interpretations. As can be seen, all of them denote one situation. The morpheme shimat does not have its lexical meaning, but has grammaticized meanings. It is also possible for (5) to have a reduced form chatta instead of -te shimatta. When this happens, only the one-situation interpretation is possible. This nicely illustrates that the grammaticization process and the

phonological reduction go together. This phenomenon can be interpreted as resulting from the high continuity between the two situations of the te-clause and its following clause, which the i-clause lacks. That is, since the situations of the te-clause and the following clause are more likely to be asserted and interpreted to belong together as a unit, the second verb tends to lose its lexical meanings, denoting an independent situation, and eventually grammaticizes to an auxiliary morpheme.

Most earlier studies (including Hinds 1976, Inoue 1983, Kuno 1973a and b, and Tamori 1977) have considered the problem of i- and te-clauses by inventing sentences or discourses or by selecting examples from actual discourse. Although these studies indicate some of the relevant parameters, they lack quantitative rigor. Myhill and Hibiya's study (in press) is one exception, but these authors are looking at the problem from a different perspective from the present study: they are concerned with the information level carried by each type of clause, using a novel as the data base. Saul's experimental study does not specifically look at the clause types. The present study looks at actual discourse and shows that the choice of the three clause types is statistically correlated with the continuity between the situations expressed in the clause in question and the following clause.

Data

A cook book containing 21 recipes was used as a text. All of them were tofu ('bean curd') related dishes. Each dish had four to thirteen pictures which in some intuitive sense show the major steps in cooking the dishes. Each picture was accompanied with a few clauses explaining each step. There are two main reasons I chose this type of text. First, one can find enough instances of each clause type.[4] Second, since recipes are normally written in a consistent style with respect to formality, one could control for a possible effect of formality difference affecting the choice of the clause.

Tables 1 and 2 summarize the basic statistics (see page 5).

Table 1
Frequency of Clause type

Clause Type	N	%
<u>te</u> -clause	46	15.59
<u>i</u> -clause	78	26.44
<u>ru</u> -clause	141	47.80
other	30	10.17
Total	295	100

Table 2
Number of Clauses in a Sentence

# of Clauses in a Sentence	Frequency	%
1	48	34.04
2	54	38.30
3	23	16.31
4	11	7.80
5	4	2.84
6	1	0.71
Total	141	100

As can be seen, I found 295 clauses. Note that the three clause types, -te, -i, and -ru, covered most (89.83%) of the clauses in the data. This indicates the importance of studying these particular clause types. I found 141 sentences. 65.96% (93 out of 141) of these sentences had more than one clause and formed a so-called "clause linkage". The rest were single clause (i.e. ru-

clause) sentences. The longest clause linking had 6 clauses. Each recipe had an average of 14.05 clauses and 6.71 sentences.

Methods and Results

At present, we do not have a direct way of assessing the writer's intent which, I believe, ultimately controls the choice of the three types of clauses. In other words, I am claiming here that the reporting of situations in language is strongly correlated with how situations occur in the real world, and how the writer perceives and conceptualizes them, but it is not determined by these factors. Rather situation reporting is determined by how the writer wants to present those situations to the reader: the writer's intent. In order to test the present hypothesis exhaustively, one has to assess it directly (cf. Carlson 1985 and 1987; Hinds 1979). However, the lack of methodology forced me to look at the problem in an indirect way.

I looked at participant, time and place of each type of clause and its following clause.[5] I predicted that if the hypothesis was true, those factors would tend to be the same in the te-clause and its following clause more often than would be the case with the i-clause and its following clause. And those factors would tend to be the same in the i-clause and its following clause more often than in the ru-clause and its following clause. That is, if participant, time and place are the same in the situations in language which the writer is trying to convey to the reader, then these situations should tend to be perceived, conceptualized and presented as belonging more tightly together than where they are different. Then the writer should tend to choose a clause type which indicates this continuity if there is a choice.

For this study, a clause was identified as a predicate and its arguments. Embedded complements and relative clauses were considered as part of the main clause, though when these types of clauses contained one of the three clause types and their following clause, they were considered as a separate token.

Participant

This measure assesses the continuity of the two situations in terms of participant. For this measure, I counted the number of participants who or which were not expressed or implied at all in a particular clause, but were lexically expressed in the following clause.[6] Consider the following examples:

- (7a) torisuupu o futtou sase .
 chicken:soup DO boil CAUSE:I
 Bring the chicken soup to a boil and
- (7b) matsunomi toriniku nado o ire .
 pine:GEN:seed chicken:meat etc. DO put:I
 put the pine seeds, the chicken meat, etc. (in the soup),...
- (8a) kanarazu futa o shite .
 certainly lid DO do:TE
 ...be certain to put the lid (on it) and
- (8b) nijuppun oite . (8c) katamemasu
 20:minute leave:TE harden:POL:RU
 leave (it) for 20 minutes to let it become firm.'

In (7), the clause in question is (7a). The second clause, (7b), has matsunonomi 'pine seeds' and toriniku 'chicken meat' which are not in the first clause. Thus the situation of (7b) was considered to have two new participants not found in (7a). This pair of clauses illustrates the type of clause linkage which I counted for the participant measure. On the other hand, in (8), the second and the third clauses (8b and 8c) have no lexically expressed arguments which are not in their respective preceding clauses. Thus, the situations of the (8b) and (8c) were considered to have no new participant. It was hypothesized that more new participants tended to occur in the situation of the clause following the i-clause than the te-clause, and in the situation of the clause following the ru-clause than the i-clause.

The results of this measure are presented in Table 3 (see page 8). The numbers 0 to 4 on the top row are the number of participants which were not expressed in the given clause but were lexically expressed in the following clause. The results showed an increasing tendency from the te-clause to the ru-clause as the number of newly mentioned participants increased. 82.6% of the te-clause were used when there was no newly mentioned participant in the following clause whereas 65.4% of the i-clause were used when there were one or two newly mentioned participants. 79.2% of the ru-clauses were used when there were one or two newly mentioned participants. Looking down the columns, we can see that only the ru-clause was used when more than two participants were newly mentioned in the following clause. The mean value of each clause type showed the same increasing tendency from the te-clause to the ru-clause: 0.174 newly mentioned participant in the clause following the te-clause, 0.795 for the i-clause, and 1.258 for the ru-clause. The Kruskal-Wallis test for non-parametric analysis of variance also showed that the difference among the

three clause types was statistically significant at the .01 level. Further, pairwise comparisons among these clause types were all significant. Kendall's tau which indicates the strength of association between two ordinal variables was .465. Thus the results of these statistical analyses strongly support the hypothesis.

Table 3
Clause and Participant Continuity

	# of Newly Mentioned Participant					Total	Mean
	0	1	2	3	4		
<u>te</u> -clause	38(82.6%) [46.9%]	8(17.4%) [6.9%]	0(0.0%) [0.0%]	0(0.0%) [0.0%]	0(0.0%) [0.0%]	46	.174
<u>i</u> -clause	27(34.6%) [33.3%]	40(51.3%) [34.5%]	11(14.1%) [28.9%]	0(0.0%) [0.0%]	0(0.0%) [0.0%]	78	.795
<u>ru</u> -clause	16(13.3%) [19.8%]	68(56.7%) [58.6%]	27(22.5%) [71.1%]	7(5.8%) [100%]	2(1.7%) [100%]	120	1.258
Total	81	116	38	7	2	244	.906
overall	H=68.94, df=2, p<.01						
<u>te</u> -clause vs. <u>i</u> -clause	H=27.48, df=1, p<.01						
<u>i</u> -clause vs. <u>ru</u> -clause	H=15.21, df=1, p<.01						
overall	$\tau = .465$						

Time

This measure assesses the continuity of the two situations in terms of time. For this measure, I counted whether the situation of a particular type of clause and the situation of the following clause occurred simultaneously, sequentially with little or no time lapse, sequentially with a rather long time lapse, or counter-sequentially (hereafter **Simultaneous**, **Sequential**, **Lapse**, and **Counter-Sequential** respectively). This measure was based on the semantic interpretation of each clause. Consider the following examples and compare them with (8):

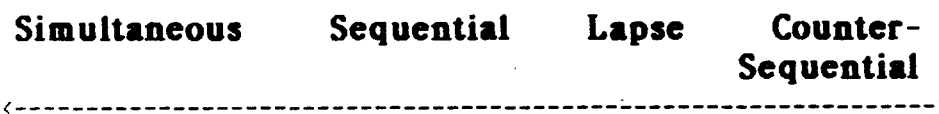
(9) tateoita matcha o ire .
 make:TE:PREP:PST matcha DO put:I
 Pour the powdered green tea which has already been made (in it) and

fukiagattekuru
 boil:up:TE:DIR:RU
 (it) is boiling up.'

(10) konnyaku nado no zaiyou o kiri .
 konnyaku etc. GEN ingredient DO cut:I
 'Cut up the ingredients, such as konnyaku and

zaiyou to tofu o itameru
 ingredient and tofu DO stir-fry:RU
 stir-fry the ingredients and the tofu.'

In (9), there is a pot already on a stove containing water-dissolved tofu mix. In the first situation, one is pouring matcha 'powdered green tea' into the pot and the second situation occurs when the material in the pot is boiling up. These two situations occur sequentially with rather a long time lapse between them, since it normally takes time for things to boil. Thus this instance was considered as **Lapse**. On the other hand, in (10), such an inference is not necessary. Cutting up and stir-frying can occur sequentially with little time lapse. Similarly, going back to (8), note that putting the lid (on it) and leaving it occur sequentially with no time lapse since the situation of leaving it begins right after the situation of putting the lid on it. Thus these two instances were considered as **Sequential**. When the situation of a particular clause occurred after the situation of the following clause, it was considered as **Counter-Sequential**. Finally, looking at (8) again, in the second and third clause, leaving it for 20 minutes and letting it become firm occur at the same time. Thus this was considered as **Simultaneous**. These four categories can be considered to form a continuum of continuity as follows:



It was hypothesized that the situation of the te-clause and that of the following clause would tend to occur with a time relation toward the left end of the continuum whereas the situation of the ru-clause and that of the following clause would tend to occur with a time relation toward the right

end of the continuum. The situation of the *i*-clause and the one of the following clause were hypothesized to occur between these two.

The results for this measure are presented in Table 4.

Table 4
Clause and Temporal Continuity

	Simultaneous	Sequential	Lapse	Counter-Sequential	Total
<i>te</i> -clause	12(26.1%) [85.7%]	31(67.4%) [15.7%]	3(6.5%) [10.3%]	0(0.0%) [0.0%]	46
<i>i</i> -clause	1(1.3%) [7.1%]	64(82.1%) [32.5%]	13(16.7%) [44.8%]	0(0.0%) [0.0%]	78
<i>ru</i> -clause	1(0.8%) [7.1%]	102(85.0%) [51.8%]	13(10.8%) [44.8%]	4(3.3%) [100%]	120
Total	14	197	29	4	244
overall	H=21.27, df=2, p<.01				
<i>te</i> -clause vs. <i>i</i> -clause	H=14.82, df=1, p<.01				
<i>i</i> -clause vs. <i>ru</i> -clause	H=.08, df=1, NS				
<i>te</i> -clause vs. <i>i</i> -clause, <i>ru</i> -clause	H=21.20, df=1, p<.01				
<i>te</i> -clause vs. <i>i</i> -clause, <i>ru</i> -clause	$\tau = .288$				

The results show an increasing tendency from the *te*-clause to the *ru*-clause as the change in time between the present clause and the following clause becomes greater. 85.7% of the clauses which were considered as **Simultaneous** were *te*-clauses. 100% of the clauses which were considered as **Counter-Sequential** were *ru*-clauses. 67.4% of the *te*-clause, 82.1% of the *i*-clause and 85.0% of the *ru*-clause were used in the environment of **Sequential**, which covered 80.7% (197 out of 244) of the whole sample. This means that the *i*-clause is more likely to be used than the *te*-clause as temporal discontinuity between the present clause and the following clause becomes greater. As discontinuity increases, the *ru*-clause is more likely to be used than the *i*-clause. This is exactly the direction predicted by the hypothesis. The Kruskal-Wallis test for non-parametric analysis of variance also showed that the difference among the three clause types was

statistically significant at .01 level. Thus the results of this statistical analysis strongly support the hypothesis. Pairwise comparisons among these clause types, however, revealed that only the difference between the te-clause and the i-clause was significant. Thus we might suggest that this factor is not strongly correlated with the choice between the i-clause and the ru-clause. So I grouped the clause types into two groups, one consisting of the te-clause and the other consisting of the i-clause and the ru-clause. A comparison between the two groups showed that the difference was statistically significant. Further, Kendall's tau on the four levels of temporal continuity and the two groups of the clauses (i.e. te-clause and i-clause/ru-clause) were .288. Thus we might suggest that temporal continuity is correlated with the choice between the te-clause and the other two clauses.

Place

This measure assesses the continuity of the two situations in terms of place. For this measure, I counted whether the situations of a particular clause and the situation of the following clause occurred at the same place or not. Again, this measure was based on the semantic interpretation of each clause. Consider examples (8) and (10) again. In (10), the action of cutting up ingredients and the action of stir-frying them occur at different places: on a cutting board vs. in a frying pan on a stove. Thus (10) was considered to have a change in place between the first situation and the second situation. On the other hand, in (8), all the situations occur at the same place. Thus it was considered to have no change between the first situation and the second situation, and between the second situation and the third situation. It was hypothesized that the two situations of the te-clause and its following clause tend to occur at the same place more often than those of the i-clause, and the two situations of the i-clause and its following clause more than those of the ru-clause.

The results for this measure are presented in Table 5 (see page 12).

Change means that the two situations of a particular clause type and the following clause occurred at different places whereas **No Change** means they occurred at the same place. The results showed that there was an increasing tendency from the te-clause to the ru-clause in the environment of **Change**: 15.2% of the te-clauses, 25.6% of the i-clauses and 54.2% of the ru-clauses were considered as involving **Change**. This means that the i-clause is more likely to be used than the te-clause when there is a change in place, and that the ru-clause is more likely to be used than the i-clause in the same environment. This is exactly the direction predicted by the hypothesis. The Kruskal-Wallis test for non-parametric analysis of variance also showed that the difference among the three clause types was statistically significant at the .01 level. Pairwise comparisons among these clause types, however, revealed that only the difference between the i-

clause and ru-clause was statistically significant. Thus we might suggest that spatial continuity is not strongly correlated with the choice between the te-clause and the i-clause. I grouped the clause types into two groups, this time with one group consisting of the te-clause and the i-clause and the other consisting of just the ru-clause. A comparison between the two groups showed that the difference was statistically significant. Further, Kendall's tau on the two levels of spatial continuity and two groups of the clauses (i.e. ru-clause and te-clause/i-clause) was .334. Thus, we might suggest that spatial continuity is correlated with the choice between the ru-clause and the other two clauses.

Table 5
Clause and Spatial Continuity

	No Change	Change	Total
<u>te</u> -clause	39(84.8%) [25.7%]	7(15.2%) [7.6%]	46
<u>i</u> -clause	58(74.4%) [38.2%]	20(25.6%) [21.7%]	78
<u>ru</u> -clause	55(45.8%) [36.2%]	65(54.2%) [70.7%]	120
Total	152	92	244

overall H=28.46, df=2, p<.01
te-clause vs. i-clause H=1.83, df=1, NS
i-clause vs. ru-clause H=15.62, df=1, p<.01
te-clause, i-clause vs. ru-clause H=27.13, df=1, p<.01
te-clause, i-clause vs. ru-clause τ =.344

Additionally, the following two measure were performed.

Punctuation

Japanese has two major punctuation markers: ten (comma) and maru (period). maru is obligatorily used after every ru-clause (the finite clause) whereas the use of ten is not structurally determined (its position varies

depending on the writer). Assuming maru (period) is the marker for a rather sizable conceptual break, these facts support the hypothesis since maru is used only after the ru-clause. These facts further suggest that we should investigate the use of ten after te- and i-clauses. In grade school in Japan, one is instructed to "put a ten after every conceptual chunk". Although conceptual chunk is a rather vague notion for linguists, most native speakers utilize this notion with no difficulty when they write.[7] Since the positions of tens are not structurally determined, it was hypothesized a ten should occur between the i-clause and its following clause more often than between the te-clause and its following clause as a reflection of the writer's intent in structuring the situations.[8]

The results for this measure are presented in Table 6.

Table 6
Clause and Punctuation

	<u>Ø</u>	<u>ten</u>	Total
<u>te</u> -clause	39(84.8%) [81.3%]	7(15.2%) [9.2%]	46
<u>i</u> -clause	9(11.5%) [18.8%]	69(88.5%) [90.8%]	78
Total	48	76	124

χ^2 with Yates' correction=62.38, df=1, p<.01
V=.726

ten means that a particular clause type is separated from the following clause by a ten whereas Ø means there was no ten separating between the two clauses. The results showed that 88.5% of the i-clauses were separated from the following clause by a ten whereas 84.8% of the te-clauses had no ten between the present clause and the following clause. This means that the i-clause is more likely to be separated from the following clause than than the te-clause from the following clause. This is exactly the pattern predicted by the hypothesis. The Chi-square test with Yates' correction also showed that the results were statistically significant at the .01 level. Further, the value of the Cramer's V which indicates the strength of the association between two nominal variables was .726. Thus the results of these statistical analyses strongly support the hypothesis.

Picture Boundary

I also counted whether the ending of each clause type coincided with a picture boundary. Intuitively, I assumed that the picture boundaries represented conceptual breaks of more or less the same degree at some level and hypothesized that the end of the i-clause would tend to coincide with the picture boundaries more often than that of the te-clause, and that the end of the ru-clause would coincide with picture boundaries more often than that of the i-clause.[9]

The results for this measurement are presented in Table 7.

Table 7
Clause and Picture Boundary

	No	Yes	Total
<u>te</u> -clause	42(91.3%) [41.2%]	4(8.7%) [2.8%]	46
<u>i</u> -clause	57(73.1%) [55.9%]	21(26.9%) [14.8%]	78
<u>ru</u> -clause	3(2.5%) [2.9%]	117(97.5%) [82.4%]	120
Total	102	142	244

overall $\chi^2=153.88$, df=2, p<.01

te-clause vs. i-clause χ^2 with Yates' correction=4.89, df=1, p<.05

i-clause vs. ru-clause χ^2 with Yates' correction=108.17, df=1, p<.01

overall V=.794

Yes means that the ending of a particular clause type coincided with a picture boundary whereas **No** means that there was no such coincidence. The results showed that there was an increasing tendency from the te-clause to the ru-clause when the end of a clause coincided with a picture boundary: 8.7% of the te-clauses, 26.9% of the i-clauses and 97.5% of the ru-clauses coincided with a picture boundary. This means that the i-clause is more likely to be used across the picture boundary than the te-clause. In the

same environment, the ru-clause is more likely to be used than the i-clause. This is exactly the pattern predicted by the hypothesis. The Chi-square test showed that the results were statistically significant at the .01 level. The Chi-square tests with Yates' correction on the te-clause vs. the i-clause and the i-clause vs. the ru-clause showed that both of the distinctions were statistically significant. Further, the value of the Cramer's V was .794. Thus the results of these statistical analyses strongly support the hypothesis.

Discussion

The results of this study revealed that participant, temporal, and spatial continuities were strongly correlated with the choice of the three clause types and strongly support the hypothesis: The te-clause, the i-clause and the ru-clause comprise a scale indicating continuity between the two situations expressed in the clause and its following clause. The te-clause indicates the highest continuity, the ru-clause indicates the lowest continuity and the i-clause is intermediate between them. The position of the punctuation marker ten (comma) and the distribution of the picture boundaries also supported the hypothesis. The hypothesis was substantiated empirically and the results were statistically significant.

Specifically, the results showed that participant continuity overall correlated with the choice of the three clause types, temporal continuity with the choice between the te-clause and the other two clause types, and spatial continuity with the choice between the ru-clause and the other two clause types. Thus, continuity was shown to be a complex, multidimensional phenomenon with individual factors contributing in different ways. Those individual factors correlate in specific ways with particular grammatical devices.[10]

As we have seen, this study used rather indirect methods: it tried to see the tendencies on a probabilistic level as they would manifest themselves if the hypothesis were true. Thus we do not need to explain the cases which did not follow the pattern discovered in the present study, and even if we did, we might not be able to explain all of them exhaustively.[11] The hypothesized tendencies are strongly supported by the data at a probabilistic level.

A little discussion about the methods utilized in the present study might be profitable. Although it is admittedly a rather indirect way of measuring the validity of a hypothesis, the results of this study indicate the utility of this particular method in the absence of more direct methods at the current stage of linguistic analysis. Thus such a method could be utilized to analyze similar kinds of phenomena or possibly other phenomena in languages until more direct methods are devised. Such indirect methods might be

particularly useful with languages where one does not have easy access to native speakers except through texts.[12] Since these methods assess the validity of the hypothesis on a probabilistic level, the use of statistical analysis is necessary to interpret the results, as we have seen above. It is a valuable tool which helps to discern whether the pattern is simply due to chance or is meaningful. Especially in cases such as the present one where the functions of the forms in question are rather close, it becomes essential.

Finally, the limitations of this study can be summarized as follows: First, as stated above, the methods used in the present study are rather indirect. This means that the final test of the hypothesis must await a direct way of assessing the writer's intent. Second, the sample size is admittedly small. Third, the genre of the text studied in this paper is limited to procedural discourse. Fourth, the present study did not ask the fundamental and pertinent question of why three kinds of clauses are needed, which are not functionally the same (as the present study has suggested), yet are very similar.[13] These limitations may be obviated or improved upon in future studies.

Overall, despite the limitations stated above, some interesting results have been obtained. The continuity between the two situations of a given clause and the following clause appears to show a strong correlation with the choice among the three clause types. Continuity was assessed in terms of changes in participant, time and place, and participant continuity was shown to be the strongest factor.

*I would like to thank Colette Craig, Scott DeLancey, Tom Givon, Doris Payne, Sandra Thompson, Russell Tomlin, and Yasuko Watanabe for reading earlier versions of this paper. In particular, I would like to express my gratitude to Tom Givon, Doris Payne, Yasuko Watanabe, and especially Sandra Thompson for their care and concern as well as invaluable comments. Much appreciation goes to Gordon Smyth for consultation on the statistical analyses and Ginny Grant for help with my English. Needless to say, all shortcomings and misinterpretations are entirely my own.

Notes

1. The term **continuity** is from Givon (1983a). In this paper, it refers to the degree of semantic/thematic integration between the situations. A situation was rather broadly defined as the event/state expressed in a clause.

2. Each of the suffixes -i and -te has different forms and it is not always possible to identify the morpheme boundary between the verb stem and the suffix. For the purpose of this paper, I do not give morpheme boundaries. I gloss the morphemes -i and -te with 'I' and 'TE' respectively.

3. The grammaticization is evident in the following phenomena. First, the second verb, which is in the following clause, loses its lexical meanings and acquires grammaticized meanings. Second, phonological reduction accompanies this process. The phonological material of the second verb is reduced. Third, the writing system reflects the qualitative change of the grammaticization. Different writing systems are used depending on whether a verb is grammaticized or not. Fourth, dictionaries treat grammaticized meanings and non-grammaticized (i.e. lexical) meanings in separate entries.

Yasuko Watanabe (p.c.) reminds me that Japanese has compound verbs which could be considered as deriving from juxtaposition of the i-clause and another clause. The following are some examples: fuki-agaru 'spout up' (fuku 'spout', agaru 'go up'), shibori-dasu 'squeeze out' (shiboru 'squeeze', dasu 'take out'), koge-tsuku 'burn and stick (to the bottom of the pan)' (kogeru 'burn', tsuku 'stick'), and maze-awaseru 'mix and combine' (mazeru 'mix', awaseru 'combine'). My data included this type of compounds, but they were considered as independent verbs, partly because most of them (26 out of 28) are listed as an independent verb in dictionaries. The differences between this type and the grammaticization of the verbs after the te-clause described above are the following. First, the compound verbs do not show phonological reduction whereas the verbs following the te-clause do, as we saw above. Second, the two morphemes of compound verbs are more likely to keep their lexical meanings. On the other hand,

grammaticalized verbs lose their lexical meanings. Third, compound verbs are more like "frozen" independent verbs, so possible combinations of two morphemes appears to be limited. On the other hand, grammaticized verbs are productively attached to regular verbs like an auxiliary.

4. In contrast, Yasuko Watanabe (p.c.), currently writing her dissertation on similar kinds of problems in Japanese by using narrative texts, reports that she didn't find many *i*-clauses in her data.

5. These are three of the four parameters Givon (1983b) suggested as guides to identify a break in thematicity. The fourth parameter is **action** which I didn't look at in this study because of the difficulty in defining and operationalizing the term, though Carlson (1987) actually did use these four guides for his study of a similar kind of problem in Supyire with very interesting results.

6. It would have been possible to also count instances of semantically implied participants. However, in my data, identifying semantically implied participants was not always easy, partly because pictures were used. So I am counting only lexically expressed participants here.

Another way of assessing the participant parameter would be to look at whether participants which were semantic arguments of the first clause continued to be expressed or implied in the second clause (Givon 1983b). A preliminary study showed that most of the subjects in my data were zero anaphors indicating an impersonal referent who is supposed to be cooking. It was also shown that most of the referents of the direct object of the *te*-clause and the *i*-clause continued to be expressed or implied in their respective following clauses. Thus, counting participants this way would not have showed differences between the two clause types. So I decided to use the measure described above which looks at the disruptive effect of new participants.

7. It is said that 100% of Japanese people know how to write. Incidentally, I am not good at putting *tens* in writing.

8. This kind of measure was suggested by Fox (1985), Ramsay (1987), and Thompson (1985).

9. Doris Payne (p.c.) has rightly suggested that it needs to be empirically confirmed that the picture boundaries represented some conceptual breaks and that these conceptual breaks had more or less the same value. The results were still interesting without this confirmation.

10. A preliminary run of multivariate analysis on the three types of continuities suggested the following strength hierarchy on the choice of the clause.

Participant > Time > Place

Although my limited knowledge of statistics does not allow me to explain the logic of this analysis nor to present the detailed results, the hierarchy shows the strength of each factor in combination with others. It is interesting here to remember that the results of this study suggested that spatial continuity by itself has stronger correlation with the choice of the clause than the temporal continuity by itself: Kendall's $\tau = .344$ vs. $\tau = .288$. Thus the finding of the hierarchy above suggests that we have to look at not only one factor at a time but the interaction of the factors. This further suggests that one needs to have some way of assessing the interaction, such as multivariate analysis.

11. If I had used a direct way of assessing the writer's intent, which was claimed to be the ultimate factor controlling the choice of the clause, then I would have had to explain all the counterexamples.

12. It is interesting to note here that Akiba (1978) described three nonfinite clause types in Old Japanese, including the ones we have been looking at, and reported that in Old Japanese the *i*-clause as well as the *te*-clause was an outlet for grammaticized verbs and eventually grammatical morphemes from lexical verbs. My methods might be profitably utilized to determine the validity of Akiba's analysis.

13. Marchese (1987) claimed that the frequent use of the conditional in Godie procedural discourse can be attributed to the discourse goal of this genre: teaching someone a procedure. Although I do not have any clear ideas of why there need to be three functionally rather similar clause types, Marchese's claim suggests one possible direction we can follow to deal with this question: the existence of the three functionally similar clause types might have something to do with the discourse goal of the recipes. It might be helpful here to remember that one does not find many instances of the *i*-clause in narratives, but in recipes all three types are found.

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Marking Discontinuity in Pima and O'odham (Papago)<1>

Janine Scancarelli
(University of Kentucky/UCSB)

Pima and O'odham (or Papago) are two closely related languages of the Tepiman (or Pimic) branch of the Uto-Aztecan family. They have been analyzed as containing morphemes which are switch-reference markers (Langdon and Munro (1979), Munro (1983), Hale (1983)). The morphemes in question are c, which conjoins nominals, and which also conjoins clauses and verb phrases with the same subjects; k, which conjoins clauses and verb phrases with the same subjects; and ku-, which conjoins clauses with different subjects. Ku- also begins some information questions (Q-questions) and often appears in main clauses which are preceded by subordinate clauses, regardless of the identity of the subjects (de Chene 1976).

In this paper I discuss various analyses proposed to account for the occurrences of these morphemes (section 2), and then I present a revised analysis, based on the study of some elicited Pima sentences and of several Pima and O'odham texts (section 3).<2> I propose that ku- is not a different subject marker, but rather is a marker of discontinuity, with change of subject being just one kind of discontinuity that ku- can mark. C and k are same-subject markers, inasmuch as they do indeed conjoin clauses and verb phrases which share subjects. C occurs after imperfective (also called "continuative") clauses, and k occurs after perfective (also called "non-continuative") clauses, as claimed by Hale (1969, 1983), Saxton (1982), Saxton and Saxton (1969), and Saxton, Saxton, and Enos (1983).

In addition to its function as a clause connector, ku- has been to some extent grammaticized in other constructions. The use of ku- in these constructions follows naturally from the diachronic analysis of ku- proposed by Hale (1983).

It can be misleading to call c, k, and ku- "switch-reference", for such terminology does not accurately reflect their status in the grammars of Pima and O'odham. C, k, and ku- are unlike canonical switch-reference markers in that they are not inflectional categories of the verb (Haiman and Munro 1983b:x). Although k and c may be considered devices for referential tracking (the functional criterion for canonical switch-reference, according to Haiman and Munro), ku- is not always useful in referential tracking, since it marks same-subject as well as different-subject.

My analysis of ku- lends support to Hale's (1983) claim that ku-, rather than being a true conjunction like c and k, serves several functions including subordination.

To the best of my knowledge, all statements in the paper apply to both Pima and O'odham unless otherwise noted.

1. Some relevant morphology and syntax

The minimal simple declarative or interrogative sentence in Pima and O'odham generally consists of a verb and an auxiliary, hereafter abbreviated as AUX. The AUX consists of a base or support vowel ('o if no suffixes follow it, 'a otherwise) plus a suffix marking person and number of the subject of the sentence (this suffix is zero for third person subjects). These elements may be followed by aspectual and modal suffixes. For reference, I list the imperfective and perfective forms of the AUX.<3>

	<u>Imperfective</u>		<u>Perfective</u>	
	<u>sg.</u>	<u>pl.</u>	<u>sg.</u>	<u>pl.</u>
Person: 1	'af	'ac	'an-t	'at-t
2	'ap	'am	'ap-t	'am-t
3	'o	'o	'a-t	'a-t

The examples in (1) and (2) illustrate simple Pima sentences.

- (1) Neid 'ac.
 see 1pl.AUX
 'We see him/her/it.'
- (2) Nei 'a-t.
 see=PF 3.AUX-PF
 'He/she saw him/her/it.'

The AUX generally appears in second position, but under certain circumstances the AUX will appear initially.<4>

In both languages, the first position of a sentence may be filled by a word such as a quantifier, (stranded) postposition, or verb, or by a noun phrase or postpositional phrase, or by an introducer (following the terminology of Saxton 1982:126). The introducer and the AUX together form a phonological word with deletion of the glottal stop of the AUX base. One example of an introducer is n-, used in "because" clauses and in yes-no questions, as illustrated in (3).

- (3) N-ap s-maac hegai ceoj?
 QIN-2s.AUX AFF-be:knowing that man
 'Do you know that man?'

Other introducers include m-, a subordinator, and ku-. Ku- requires deletion of the support vowel of the AUX. The m- introducer is used in relative clauses, adverbial clauses and sentential complements, regardless of the subjects of the subordinate and main clauses.

In Pima, and to some extent in O'odham, m- may also be used to introduce main clauses.<5>

For some speakers, c is pronounced as kc when the preceding word ends in a vowel; for other speakers c and kc occur in free variation (Hale 1983:300). C conjoins nouns, noun phrases, postpositional phrases, verb phrases and clauses; it comes between the two conjuncts. Following Hale (1983) I will say that c conjoins clauses if the second conjunct contains an AUX (as in (4)), and conjoins verb phrases if the second conjunct does not contain an AUX (as in (5)).

(4) a. § hema 'ab si kiijeg t 'ab da
 QT one LOC INT doorway LKR at be:sitting
 'One was sitting right in the doorway

b. kc 'a-§ heg hi wa §a 'al
kc 3.AUX-QT that:one CONTR MOD a:bit little
 'and he was a little bit stunned.'

s-e-cuhugi.

AFF-RF-faint

(§ is the AUX in (a).) (CIS, 56-57)

(5) a. § 'am hu heba'i hema q̄ ge'e ban
 QT LOC REM sometime one COP big coyote
 'One time, it is said, there was a big coyote

b. c 'am 'i bihugim . . .
c LOC PCT become:hungry
 'and he got hungry . . . ' (CJPa, 1-2)

C is the first constituent of the second clause, since, if an AUX is to follow c, it must directly follow c, and no word or introducer may intervene. This ensures that the AUX is in second position.

An AUX may appear in the second clause with c only if the AUX contains a mood marker, such as the -g in (4b) (Hale 1983:308), though the second clause AUX is generally, but not always, deleted when it would be identical to the AUX of the first clause (Saxton and Saxton 1969:147-148).<6>

K can conjoin verb phrases and clauses, and behaves like c insofar as position and occurrence of the AUX is concerned. Example (6) shows k conjoining verb phrases.

(6) a. § 'am 'i kokowoq̄
 QT LOC PCT become:full=PF
 'They all got full

b. k 'am hahawa ha'icu cicwii.
k LOC then something play
 'and then they went and played.' (LB, 24-25)

Ku- is an introducer. When it occurs in a clause where the AUX would otherwise consist only of a support vowel (i.e., a clause which has a third person subject, is imperfective, and has no mood marked on the AUX), it appears as k. Prima facie, it may seem that k<ku and k are likely to be confused, but this is not the case. First, the homophony is possible only in imperfective clauses with third person subjects and without mood markers. More important, k<ku and k are distinguished by context, as the discussion in the rest of the paper will show, and no doubt intonation distinguishes them as well. In addition, k<ku is much rarer in texts than k. In a sample of 330 clauses, clause-initial "k" occurred 59 times. 64% of those "k's" are unambiguously k; 31% are determined by context to be k; and only 5% are k<ku.

In my O'odham data, ku- is often deleted before AUX's which contain more than just a support vowel (i.e., which contain some consonantal suffix). Underlying ku+'ant, then, may appear as kunt (ku- requires deletion of the support vowel) or as nt, in O'odham. This is not the case in the Pima data, for deleting the ku- would leave the AUX in first position, which is not allowed in the dialect of Pima which is discussed here. In O'odham there is a difference between an AUX with ku- deleted and a plain, bare AUX: the former contains no support vowel (e.g., nt), whereas the latter does have a support vowel (e.g., 'ant).

Plain AUX's without support vowels (like nt) mark the same discontinuities that AUX's with ku- mark. If an overt ku- is to appear, it is more likely to occur at the beginning of what might be called a sentence, but it is also true that ku- is very often deleted at the beginning of a sentence. I do not know precisely which factors determine whether O'odham ku- is deleted. Textual data suggest that there is considerable variation among individuals as to whether ku- appears, for in some narratives almost no ku-'s are deleted and in others almost all of them are. It seems likely that the presence of ku- may indicate that the speaker wants to make some discontinuity especially explicit.

In addition to linking clauses, ku- may introduce information questions (Q-questions). Most question words have two forms, a sentence-initial form and a non-initial form. When the question word is not sentence-initial, the question begins with ku- (which may appear as k or as \emptyset , as described above). The AUX and the sentence-initial question word may or may not form one word: some question words allow both possibilities, and others do not. The examples below show a Q-question beginning with ku- (7), a Q-question beginning with an independent question word (8), and a Q-question beginning with a Q-introducer 'what' + AUX (9).

- (7) Ku-p hascu koa'a?
ku-2s.AUX what eat
 'What are you eating?'

(8) Şaacu 'ap koa'a?
what 2s.AUX eat
'What are you eating?'

(9) Şaa-t hem-juu?
what-PF 2s.O-do=PF
'What did they do to you?' (The support vowel
of the AUX has been deleted.)

In the texts considered here, all the Q-questions (a total of only three) begin with ku-, rather than with a question word, so it is not possible to say what determines whether a question will begin with ku-.

I believe that the uses of ku- in questions is a grammaticization of its use as a clause connector. I discuss this again in section 4.

I will discuss the appearance of ku- in conditionals in section 3.

2. Previous analyses of c, k, and ku-

Munro (1983) states that c and kc and k serve as same-subject markers and that ku-, in addition to occurring in certain same-subject and simple-sentence contexts, marks different-subject. The difference between c and ku is illustrated in examples (10) and (11).

(10) a. Hegai 'uuvi 'a-t 'am şohfi hegai ceoj
that woman 3.AUX-PF LOC hit=PF that man
'The woman hit the man

b. c 'am şoşa.<7>
c LOC cry
'and (she) cried.'

(11) a. Hegai 'uuvi 'a-t 'am şohfi hegai ceoj
'The woman hit the man

b. ku-t 'am şoşa.
ku-PF
'and he cried.'

The analysis that I propose includes a broader statement about ku- which accounts for both its same-subject and different-subject uses, and treats the simple-sentence contexts (i.e., the Q-questions) as a grammaticization of the use of ku- as a marker of discontinuity.

Hale (1969, 1983) argues that c and k are same-subject conjunctions, with c occurring when the immediately preceding clause is imperfective, and k occurring when the immediately preceding clause is perfective. It is possible for the conjunction k to follow verb forms which are

identical to imperfective verb forms, for the following reason. Perfective verb forms are generally formed through the truncation of imperfective verb forms. The conjunction k can be fused to the verb of the preceding clause, if the verb ends the clause. Fusion of the conjunction to a preceding verb form blocks truncation; hence the verb appears in its usual imperfective form (Hale 1983:304). Although Saxton and Saxton (1973) do not write the conjunction k as part of (i.e., fused to) the preceding verb, that is presumably the reason that we find k in (12b), after the imperfective form of the verb meaning 'go for firewood'.

- (12) a. § 'eḡa hegai 'uwi ku'agameḡ
 QT then that woman go:for:firewood
 'The woman had gone to get firewood
- b. k 'am 'oimeḡ
k LOC go:about
 'and was going about . . .' (FS, 120-121)

The AUX in (12a) does not indicate that the clause is perfective; tṣ might be expected as the perfective quotative auxiliary, but the t of the perfective AUX is commonly deleted before a number of suffixes, including the quotative § (Saxton and Saxton 1973:387).

Hale (1983:306) refers to ku- as an auxiliary element rather than as a conjunction. Ku- is distinguished from c and k on formal grounds (ku- and the AUX are one word; that is not the case for c and k) and on functional grounds, since ku- has various uses besides coordination. Hale mentions ku-'s role (a) as a subordinator, alternating with m when the subject of a subordinate clause is different from the subject of the main clause; (b) as an introducer in the apodoses of certain "protasis" constructions; (c) as an introducer of syntactically independent clauses, including first sentences in turns at talk; and (d) as a coordinator of clauses with distinct subjects. Hale (1983) presents examples of ku- in roles (b - d); ku- in role (a) is exemplified in a longer version of Hale (1983), available from Hale (see Hale 1983:299).

Hale (1983:305) claims that ku- is, in effect, a signal of "a switch in 'topic'": since the subject is generally the topic, a switch in subject will call for ku-, and that therefore ku- can be thought of as a switch-reference marker. A difficulty here is that ku- is used in clauses which do not appear to involve a switch in topic. This is illustrated in examples (13) and (14). In (13), we have a string of clauses with the same subject and, arguably, with the same topic. The reason ku- is used in clause (13f) is not that the topic is changing, but rather that the narrative is shifting from description to action.

(13) a. 'iida cuuvi 'a-ş si voho s-'eebef,
 this jackrabbit 3.AUX-QT INT really AFF-scared
 'This jackrabbit was very frightened

b. c 'a-ş hab 'e 'aag,
 c 3.AUX-QT thus RF say
 'and he said to himself,

c. "M-an-t habş va meedad
 INTR-1s.AUX-PF just MOD will:keep:running
 'I'll just keep running

d. "cem 'an-s o s-geevko,"
 MOD 1s.AUX-DUB FUT AFF-tired
 'even though I'm tired,"

e. n-a-ş pi 'iida cuuvi wuđ ge
 QIN-3.AUX-QT NEG this jackrabbit COP very
 'because he was a very old rabbit.

keli cuvvi.
 old:man jackrabbit

f. Ku-ş 'am 'i meedad,
ku-QT LOC PCT will:keep:running
 'While he was running, . . .'

(NB: this clause is syntactically a main clause
 and may also be translated 'And so he kept
 running,') (CJPi, 3-8)

In example (14) there is no change of subject or topic. The ku- in (14c), along with the repetition of hegai ban 'that coyote', is used rhetorically to emphasize the fact that this is the conclusion of the story, and that it is unexpected. Ku-, then, is marking the lack of continuity that the speaker feels between clause (14c) and the preceding text.

(14) a. . . . hegai ban 'a-ş 'am him
 that coyote 3.AUX-QT LOC go
 ' . . . the coyote went

b. k 'am dahiwa 'uus veco,
k LOC sit tree under
 'and sat under a tree,

c. ku-ş 'am 'i muu hegai ban, . . .
ku-QT LOC PCT die=PF that coyote
 'and the coyote died, . . . (CJPi, 47-49)

Hale suggests that c and k derive from Uto-Aztecan verbal suffixes *-ti and *-ka, respectively (p.311ff). These were markers of proximate (i.e., same-subject)

subordination suffixed to verbs, which appeared clause-finally. He suggests that ku- is a reflex of *-ku ~ -ko, the Proto-Uto-Aztecan obviative (i.e., different-subject) subordinator (p.313ff.). Hale notes that in Tepecano and Névome, related Tepiman languages, the cognate morpheme is "not so consistently obviative" (p. 314) as it is in O'odham, and that it often indicates a "break in continuity" (Hale p. 314, citing Mason 1916:337).

Saxton (1982:121, 124, 239-43) analyzes kc, c, and k as allomorphs of a single conjunction kc. According to him, the basic form of the morpheme is kc, becoming k by truncation after a perfective clause, and, if not truncated, becoming c after a vowel. The conjunction is the final constituent of a verb word--like many (conjunction-less) verbs, the conjunction forms its perfective by truncation. Saxton constructs a rather abstract analysis in which the single conjunction kc is identical to what might be called a participial suffix -kc, which has the same allomorphs: -kc and -c on imperfective verb stems, and -k on perfective stems. He allows the conjunction to be detached from its verb to account for cases in which the conjunction does not immediately follow the verb.

Hale (1983:310-311) proposes a different analysis, in which the conjunctions and the participial suffixes are homophones and are related only etymologically. Participles appear only in clauses without auxiliaries, and they may appear in various positions within their clauses. The participial suffixes need not appear at clause boundaries, since they appear on verbs and word order in these languages is not fixed (see Payne 1987). The conjunctions, in contrast, may appear with auxiliaries under certain circumstances, and they always appear at clause boundaries. A conjunction will appear immediately after a verb only if the preceding clause is verb-final. Further, conjunctions may or may not be fused phonologically to verbs which immediately precede them, whereas participial suffixes are always parts of verb words. I accept Hale's analysis and consider the conjunctions and the participial suffixes to be historically related.

The question remains whether all the conjunction forms ought to be considered allomorphs of a single morpheme; since c, as a general conjunction, has so many more uses than k, and since c does not seem at all verbal in those functions, I see no special advantage in the truncation hypothesis, and I therefore consider c and k to be separate morphemes.

According to Saxton (1982:126), ku- "introduces discourse medial independent nonshared subject clauses." Saxton does not consider the use of ku- in same-subject contexts.

3. A revised analysis of Pima and O'odham switch-reference

When a main clause has a subject that is different from the subject of the preceding clause, that second clause begins with ku-, unless it begins with a noun phrase or some other lexical phrase or item. But if this is the only statement made about ku-, about ten percent of ku- clauses remain unaccounted for. A more general description of the use of ku- is needed if all the data are to be accounted for. In fact, ku- is used to introduce a main clause when that clause represents a shift (in focus of attention, point of view, or time frame)--a discontinuity of sorts--from the previous clause. A change in subject is one kind of discontinuity; others include: the beginning of a turn at talk, as Hale explains; a shift from direct or indirect speech or thought to action (i.e., to the sequence of main events in the text); a shift from description or elaboration to action; or a change in time, either forward or backward.<8> Often, more than one of these discontinuities will occur simultaneously. Different uses of ku- are illustrated in the examples below. In (15), ku- is used in a clause following a clause with a different subject.

- (15) a. \$ haha waş daa.
QT then just fly=PF
'And just then he flew.'
- b. Ku-\$ 'am cum mummu.
ku-QT LOC MOD wound
'They tried to wound him, . . . ' (FS, 92-93)

In (16d) ku- is used after what may be considered a kind of indirect speech.

- (16) a. 'a-t-\$ hab hahawa 'i 'em-'aa g Ban<9>
3.AUX-PF-QT thus then PCT RF-say ART coyote
'Then Coyote thought (literally, 'said to himself')
- b. m-a-t-\$ hig wo dagito g waw
SBR-3.AUX-PF-QT MOD FUT leave ART cliff
'that he would try letting go of the cliff
- c. k wo si mee.
k FUT INT run=PF
'and really run.
- d. Ku-t-\$ 'am 'i dagito g waw
ku-PF-QT LOC PCT leave ART cliff
'So he let go . . . ' (CTC, 21-24)

I have presented an example with indirect speech because in the case of direct speech one might argue that the clauses had different subjects, even if the passage were

analogous to (16), because of the necessary shift in person from first to third. With indirect speech, however, the references do not change number.

In (17c), ku- (here deleted, leaving ṣ) is used to mark a shift from description to action, or, at least, from description back to the main string of events. Another such example is found in (13).

- (17) a. 'ab 'a-ṣ daḡha gamai=wewa'ak cu'ucum
 LOC 3.AUX-QT sit seventeen small
 'There sat seventeen little bears,
- jujḡumi
 bears
- b. c weesij-j ko'a g paan c wiib.
c all-GEN eat ART bread and milk
 'and they were all eating bread and milk.
- c. Ṣ 'am 'i kokowoḡ
 QT LOC PCT become:full=PF
 'They all got full
- d. k 'am hahawa ha'icu cicwii.
k LOC then something play
 'and then they went and played.' (LB, 22-25)

In (18d), ku- is used to introduce a minor flashback, or a recapitulation of event already described. The ku- in (c) indicates that the subject that clause 'those ladies' is different from the subject of the previous clause 'the word of God'.

- (18) a. Ku-n-t si pi 'ap heñ-taat heg hekaj
ku-1s.AUX-PF INT NEG good 1s.0-feel=PF because
 'And I felt bad
- b. m-a-t heg Jioṣ 'o'ohan 'abṣ gam huu
 SBR-3.AUX-PF ART God book just LOC REM
 'because the word of God was wasted
- 'e-naankogi
 RF-waste=PF
- c. ku-t-p hems hegam 'u'uvi pi vo ṣa'i
ku-PF-COND maybe those women NEG FUT EMPH
 'and (because) maybe those ladies will never
- mai heg Jioṣ 'o'ohan
 know=PF ART God book
 know the word of God.

- d. Ku-t hegam cicina 'u'uvi bei hegai
ku-PF those Chinese women take=PF that
 'Those Chinese ladies took the scriptures. . .'
 'o'ohan . . .
 book (RM, 39-42)

One might be tempted to argue that ku- in (d) is marking the fact that the subject of (d) is different from the subject of (a), the preceding main clause, but that is not the case. Generally speaking, ku- marks a change from the subject of the clause immediately preceding it, regardless of whether it is a main or subordinate clause, as illustrated in (19), where ku- in (19d) must indicate that the subject is different from the subject of (19c) and not (19b).

- (19) a. Ku-t 'am hema 'i huḍ heg 'u'uvi
ku-PF LOC one PCT descend=PF ART woman
 'Then a lady got off
- b. k 'am ha-ḥeid heg gook cicina 'u'uvi
k LOC 3pl.0-see ART two Chinese women
 'and saw two Chinese women
- c. m-o 'am daḥha bench 'ab
 SBR-3.AUX LOC be:sitting bench on
 'sitting on a bench.
- d. Ku-t 'am ha-maa heg tapial . . .
ku-PF LOC 3pl.0-give=PF ART paper
 'She gave them a paper. . .' (RM, 32-35)

In (18d), ku- not only begins a recapitulation, but also occurs after a passage describing a thought. In the following example, (20c), ku- begins a passage which I believe is analogous to the one which begins in (18d), although instead of beginning a recapitulation, ku- in (20c) begins an elaboration--in both cases the continuous linear order of time is disturbed.

- (20) a. T-ṣ g wisag 'am hahawa wabṣ jiwia,
 PF-QT ART hawk LOC then just arrive=PF
 'Suddenly a hawk came,
- b. a-ṣ hegam si ha gewicṣulig
 3.AUX-QT those INT 3pl.0 strike:down
 'striking down the quail.

kakaiku
 quail

- c. Ku-t-ş ga huu 'amjed s-kuugkim wo
ku-PF-QT LOC REM from:there AFF-whirringly MOD
 'He would come down roaring from above . . .'

'i him
 PCT move

(QU, 11-13)

The use of ku- after a clause of description or setting (often subordinate clauses), has led to a grammaticization of ku- in Pima conditional sentences. When the "if" clause (representing a setting) precedes the conditional in Pima, the conditional generally begins with ku-, even when the subject of both clauses are identical, as illustrated in (21).

- (21) a. M-ap-t 'am o şa fi baa
 SBR-2s.AUX-PF LOC FUT IRR 1s.O devour
 'If you eat me

- b. ku-p-t o muu.
ku-2s.AUX-PF FUT die=PF
 'you will die.'

(CJPi, 19-20)

Indeed, it is generally the case in Pima that any main clause following a subordinate clause is marked with ku-.

In the O'odham data, however, conditional clauses are conjoined with a c or k when the subjects of both clauses are the same, as shown in (22).

- (22) a. M-a-t-p wuđ wo si ceojk
 SBR-3.AUX-PF-COND COP FUT INT be:a:man
 'If he were a real man

- b. c wo 'i him
c FUT PCT go
 'he would come . . .'

(FS, 57-58)

Occasionally sentences parallel to (22) are found in Pima as well; they are grammatical but rare (de Chene 1976:5).

Ku- can be used in situations where it might not be expected, with considerable rhetorical effect, marking its clause as being set off from the preceding text. This is exemplified in (14c) and in (23c), which differs from (18c) in that (23c) is set off intonationally from the sentence beginning in (23a), whereas (18c) is an integral part of the sentence beginning in (18a). (23c) is the last sentence in its text.

- (23) a. Ku-n-t si pi 'ap hefi-taat
ku-1s.AUX-PF INT NEG good 1s.O-feel=PF
 'And I felt real bad

b. n-a-t pi hegam 'u'uvi pi şa'i
 QIN-3.AUX-PF NEG those women NEG EMPH
 'because those women didn't want to know

s-maacim heg Jioş 'o'ohan.
 AFF-want:to:know=PF ART God book
 the word of God.

c. Ku-t hems pi hekid o şa'i mai.
ku-PF maybe NEG sometime FUT EMPH know=PF
 'Maybe they'll never know.' (RM, 48-50)

K and c can join coordinate clauses and verb phrases that share subjects. The conjoined clauses may be main or subordinate with respect to the rest of the text as illustrated in (12 a-b) and (16 b-c), respectively. When the first of the clauses or verb phrases is perfective, the second clause begins with k.

C is used to connect clauses and verb phrases when the first of the two clauses or verb phrases is imperfective. Clause (a) of example (10), repeated here, contains a perfective auxiliary and a perfective verb, and therefore it is a counterexample for any of the analyses which distinguish k from c.

(10) a. Hegai 'u'uvi 'a-t 'am şohfi hegai ceoj
 that woman 3.AUX-PF LOC hit=PF that man
 'The woman hit the man

b. c 'am şoşa.
c LOC cry
 'and (she) cried.'

Another counterexample is presented in (24).

(24) a. Gook hegam 'u'uvi 'a-t 'i dada
 two those women 3.AUX-PF PCT arrive=PF
 'Two women came

b. (k)c hema hegam 'u'uvi wuđ navamkam.
c one those women COP drunk
 'and one of them was drunk.'

Both (10) and (24) are elicited Pima sentences; I have found no such examples in texts. I cannot explain the c's, except to suggest that perhaps when two events are simultaneous, c may sometimes be used regardless of verb form. Dean Saxton informs me that sentences like (24) are likely to be considered deviant.<10>

Although k and c generally refer back only to the immediately preceding clause, and only when the clauses are coordinate (otherwise ku- is most likely to occur), occasionally k and c will refer back to the preceding main clause, so long as only one subordinate clause intervenes.

This is illustrated in (25), where the k in (25c) refers back to the subject of (25a).

- (25) a. Ku-ş hegai ban 'am 'i huu
ku-QT that coyote LOC PCT eat=PF
 'So the coyote ate
- hegai cuuvi
 that jackrabbit
 the jackrabbit
- b. m-a-ş 'am cem 'iattogi
 SBR-3.AUX-QT LOC MOD lie=PF
 'who had tried to fool him,
- c. k 'am 'ep huu hegai ha'icu 'iibdag
k LOC also eat=PF that something heart
 'and he also ate the berries . . .'
 (CJPI, 42-44)

(25c) can be compared with (19d), in which ku- rather than k, is used in similar circumstances.<11> The action described in (25b) is not contemporaneous with the surrounding clauses and it does not add new descriptive information to the narrative, because the hearers (and the coyote) already know what the jackrabbit has done. Perhaps as a clearly non-restrictive relative it counts as less of an interruption than the clause in (19c), which is restrictive. It may be that there is little discontinuity to be marked in (25), and that is the reason that k, rather than ku-, is appropriate.

4. A diachronic perspective

Hale (1983) argues convincingly that ku-, k, and c have developed from subordinative verb suffixes, where ku- marked different-subject and k and c marked same-subject, with k on perfective verbs and c on imperfective verbs. This distribution of k and c is still seen in participial suffixes.

C and k are same-subject conjunctions, although they differ from same-subject switch-reference markers most clearly in that they are not absolutely opposed to a different-subject conjunction. Ku- has become more than a marker of different-subject, denoting not only change in subject but also other kinds of textual discontinuity, providing an illustration of the last part of this statement by Jacobsen (1983:177):

Switch-reference is thus far from being a unitary phenomenon from a historical point of view; it arises out of markers originally present for other purposes, and in turn its

markers may take on additional values or have their meanings overridden by other factors.

From marking a change in subject, ku- came to mark simply discontinuity, including the discontinuity involved in shifting from subordinate to main clauses. This function of ku- has been grammaticized in the conditional, illustrated in (21), where ku- is regularly used, even in same-subject contexts. The use of ku- as an introducer in Q-questions is another grammaticization of its use as a discontinuity marker, in this case serving originally to highlight or set off the question in its context.

K and c may perhaps be called same-subject markers, but if ku- is to be called a different-subject marker, it should be so only with qualifications. Ku-, k, and c do not constitute a uniform set, since ku-, but not k or c, is an AUX element and since only c may be used as a general conjunction. Moreover, ku-'s function as a marker of subject change is subsumed under its function as a marker of discontinuity in present-day Pima and O'odham, and its other functions in the grammar may be seen as extensions of its use as a discontinuity marker more easily than as extensions of its use as a different-subject marker.

Notes

<1>In 1986, the Papago Tribe changed its official name to Tohono O'odham. The language is commonly called "O'odham". I am grateful to Etheleen Rosero for her help in teaching me about Pima. I am also grateful to Lynn Gordon, Hyo Sang Lee, Doris Payne, Olivia Tsosie, Charles Ulrich and especially to Pamela Munro for sharing their data and their insights. Ken Hale and Dean Saxton have given me helpful comments on an earlier version of this paper. I owe a great debt to Ken Hale and to Dean and Lucille Saxton, whose writings have made my work possible. An earlier version of this paper was presented at the 1984 Annual Meeting of the Linguistic Society of America.

<2>My work is based on careful examination of approximately 550 clauses drawn from the following texts:
Pima: A Reminiscence, by Etheleen Rosero, edited by Pamela and Rina G. Shapira (RM)
The Coyote and the Jackrabbit, as told by Etheleen Rosero, edited by Pamela Munro, et. al. (CJP1)
O'odham: The Coyote and the Jack Rabbit, in Saxton (1982: 263-266) (CJPa)
Falling Star and Morning Star Appear, in Saxton and Saxton (1973:11-19) (FS)
Coyote Imitates Skunk, *ibid.*, pp. 118-120 (CIS)
Cottontail Tricks Coyote, *ibid.*, pp. 125-127. (CTC)
A Quail Escapes the Hawk, *ibid.*, pp. 142-143. (QU)
Why Little Bear Had No Name, *ibid.*, pp. 143-144. (LB)

How to Play Field Hockey, *ibid.*, pp. 219-221.

Marriage Customs, *ibid.*, p. 251.

A Mean Ruler is Assassinated, *ibid.*, pp. 349-360.

(Abbreviations in parentheses correspond to notations given after examples in this paper. Those notations also include the clause numbers.)

Uncredited examples illustrate Pima, as spoken by Etheleen Rosero. Those examples were provided by Pamela Munro. Remarks about Pima are more properly labeled as remarks about Mrs. Rosero's speech.

<3>This analysis of the AUX follows Saxton and Saxton (1969) and Munro (1984). The name "auxiliary" is commonly used in work on Pima and O'odham, although there is no evidence that the AUX is deverbal (for further discussion see Steele 1979). I gloss the AUX element -t, as in example (2), as an aspectual suffix: PF 'perfective.' It co-occurs with perfective verb forms in the non-future and with both perfective and imperfective verb forms in the future tense.

The orthography that is used in the Pima and O'odham examples is basically the orthography developed for O'odham by Ken Hale and Albert Alvarez. However, an additional symbol, v, is used in the Pima examples to represent the bilabial or labiodental fricative which corresponds to O'odham w before vowels other than u.

The following abbreviations are used in the glosses: AFF-affirmative, ART-article, AUX-auxiliary (the support vowel plus person/number marking), COND-conditional, CONTR-contrast particle, COP-copula, DUB-dubitative, EMPH-emphatic, FUT-future, GEN-genitive, INT-intensifier, INTR-introducer, IRR-irrealis, LKR=linker, LOC-locative, MOD-modal, NEG-negative, O-object, PCT-punctual, PF-perfective, pl-plural, QIN-question introducer, QT-quotative, REM-remote, RF-reflexive, s-singular, SBR-subordinator.

<4>In Pima, more than one element may precede the AUX when one of them has been topicalized (de Chene 1976:2).

<5>In O'odham, m- is most often used as a main clause introducer in the first clause of a direct quotation; ku- may also appear in that position.

<6>There are, then, cases in which the appearance of the second AUX is optional. I do not know what principle governs its presence.

<7>This example is problematic for all analyses: one expects to find k instead of c. This issue is discussed in section 3.

<8>Some of these discontinuities could perhaps be discussed in terms of "foreground" and "background."

<9>This clause begins with a plain AUX; such clauses are rare.

<10>In Pima, c appears in the expression c aps 'but', regardless of the aspect of the previous clause, as illustrated below:

- a. John 'a-t pi şa'i keihi hegai ball
John 3.AUX-PF NEG EMPH kick=PF that ball
'John didn't kick the ball,
- b. c apş heg jeveđ keihi.
c but ART earth kick=PF
'he kicked the ground.'

<11>Clause (25c) cannot begin with k<ku. Ku- can appear as k only if the AUX lacks a mood marker, but the AUX in (25c) would require the quotative suffix. The AUX is deleted because it is identical to the AUX in (25a). (The perfective marker, -t, in the AUX in (25a) is deleted, as is often the case before the quotative.)

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Information Flow and 'Dative Shift' in English Discourse

Sandra A. Thompson
University of California, Santa Barbara

1 Introduction

In this paper, I will investigate a the problem which has come to be known as 'dative shift' in English as a way of highlighting the nature of grammar and the intimate relation between grammar and principles of human discourse.[1]

The two possible orderings of 'three-argument clauses' known as 'dative-shift', as in (1), is a celebrated fact of English grammar:

- (1) a. Laura gave Nim a bagel
- b. Laura gave a bagel to Nim

This alternation has been discussed in numerous contexts. Semantic constraints on the variation between these two orders have been the focus of Green (1974), Oehrle (1976), Goldsmith (1980), Stowell (1981), and Wierzbicka (1986) and comments thereupon by Cattell, De Lancey, Green, Kirsner, and Shopen in the same volume. Lakoff and Johnson (1980:130) mention the iconic motivation (in the sense of Haiman (1983), (1985a), (1985b)) for this alternation; Thompson and Koide (1987) explore the implications of iconicity for this alternation. Erteschik-Shir (1979) proposes that the position of the recipient in pairs like (1) a. and b. is related to its 'dominance', i.e., the extent to which the 'speaker intends to direct hearers' attention' to it.[2] Mazurkewich and White (1984) discuss its acquisition.

The fact that this alternation is subject to considerations of information flow in discourse has also been noted by several researchers. One of the first to point this out was Halliday (1970):

Typically, the prepositional form ... is associated with the function 'new', the other form with the function 'given'. p. 164

Halliday supports his claim by suggesting that the members of pairs like (1) a. and b. could be used to answer different questions, though he does not bring any actual discourse data to bear on it. Ransom (1979) suggests that the acceptability of such pairs as (1) a. and b. in English and other languages is affected by their relative animacy and definiteness. Similarly, Mallinson and Blake (1981: 163) include English among those languages in which 'the order of the patient and recipient is hierarchically determined, a participant higher on the animacy hierarchy appearing first and a definite participant preceding an indefinite one'.

Givon (1979:ch. 4), (1984a), (1984b) argues that 'dative shift' in English involves a change in the 'relative topicality' of the patient and the recipient arguments. Givon (1984a) provides figures from a

small text count from a written narrative to support his claim of topicality (which I will refer to as 'topicworthiness'): names and pronouns, in his study, occur categorically in the post-verbal position (as in (1a) above), while full (common) NP's occur categorically with the preposition at the end of the clause.

Finally, Smyth, Prideaux, and Hogan (1979) report experimental support for a 'given-new' strategy of information distribution with English dative constructions.

Analogous alternations are discussed in a range of languages in Mallinson and Blake (1981), Blansitt (1984), and Dryer (1936), as well as in Givon (1979), (1984a), (1984b), where it is also suggested that such factors as animacy and definiteness are involved in determining which variant is used. Bolkestein (1985) and Bolkestein and Risselada (1987) show that 'discourse cohesiveness' with the preceding and following context is a primary factor in the expression of non-agent arguments with tri-valent verbs in Latin.

My purpose in this paper is to take a careful look at the discourse factors involved in the choice of one variant over the other in the expression of recipients in English. My results suggest that Halliday's intuitions were precisely correct and they confirm the findings of Givon, and of Bolkestein and Risselada for Latin: information flow is critical in influencing this choice. I will demonstrate this by considering a cluster of properties which we may designate 'topicworthiness' properties.

The term 'topicworthiness' refers here to a cluster of properties which influence the packaging of information in languages of the world, specifically to the likelihood of a noun phrase being the topic of discussion. For English, this likelihood can be measured in terms of typical properties of grammatical subjects, which can be taken to be the grammaticization of discourse topics. Thus subjects have been shown to be overwhelmingly animate, pronominal, specific, definite, proper, short, and 'given', or 'active';[3] these, then, will be taken here to be the properties defining 'topicworthiness'. These properties are clearly not completely independent of one another; a noun phrase which is proper, for example, is likely to be animate. However, each of these properties measures a demonstrably different aspect of topicworthiness, and I will treat them separately to show that each plays a role in the alternation with which we are concerned.

Two hypotheses are strongly supported by the data:

1. Recipients are typically much more topicworthy than Patients.
2. Post-verbal Recipients are much more topicworthy than Recipients in end position (or, equivalently, a topicworthy Recipient is much more likely to be post-verbal than in end position).

Confirmation of these two hypotheses in turn suggests that post-verbal position in English is a favored site for non-subject topicworthy

arguments, and supports the widely-held assumption that where there is competition for this position, the more topicworthy argument wins. In the sense that the less topicworthy of the two non-subject arguments tends to be found closer to the end of the clause, these hypotheses also strongly support the 'linear modification' proposal of Bolinger (1952) and the 'functional sentence perspective' proposal of Firbas (1964), (1971).

2 Terminology

Since it has never been demonstrated that a grammatical category of 'indirect object' is motivated for English,[4] I will avoid this term and use 'Recipient' for the range of semantic relations which includes 'receiver', 'beneficiary', 'maleficiary', and 'audience'; it is intended as a mnemonic label rather than a descriptive term. I will use R for Recipient, and P for Patient.

I will avoid the 'movement' metaphors implicit in terms such as 'dative shift', and use positional labels instead: when the Recipient occupies the position immediately after the verb with no preposition, I will call that the 'post-verbal' position; when the Recipient occupies a position after the Patient, I will call that the 'end' position.

3 The Data base

A study of Recipient position in ordinary conversational English would allow the best insight into how people behave under normal communicative conditions. Such a study, however, is not feasible without a forbiddingly large data base, since three-argument verbs are extremely rare in most varieties of casual conversational English. I have thus chosen three written narratives: two murder mysteries, Agatha Christie's Murder at the vicarage [MAV] and Dorothy Sayres' Have his carcass [HHC], and a personal narrative, Herbert Terrace's Nim [NIM], the story of his attempts to teach sign language to a chimpanzee. I considered every clause containing both a Patient and a Recipient after the verb where the alternative order would have been acceptable in terms of the semantics of the verb, for a total of 196 clauses.

4 Results

In this section, I will show how the data support the hypotheses presented above: first, that R's are in general much more topicworthy than P's, and second, that post-verbal position for R's is highly determined by the topicworthiness of those R's.

4.1 Recipients vs. Patients

Hypothesis 1 involves comparing R's with P's. The data leave no doubt that they are radically different in the cluster of properties which I have termed topicworthiness properties.

Tables 1-6 show the totals for the topicworthiness properties of the R's vs. the P's in my data. We will examine each one in turn.[5]

4.1.1 Animacy

Table 1 shows the animacy results.

	<u>Recipient</u>	<u>Patient</u>	<u>Total</u>
+Animate	190 (95%)	9 (5%)	199 (100%)
	(97%)	(5%)	
+Animate	6 (3%)	187 (97%)	193 (100%)
	(3%)	(95%)	
Total:	196 (100%)	196 (100%)	

Table 1: Animacy of R's vs. P's

The figures in Table 1 support the claim that R's are higher in topicworthiness in two ways. From the point of view of the columns, this table shows that 97% of the R's in the data were animate, but only 5% of the P's were animate. From the point of view of the rows, we can see that only 5% of all the animate noun phrases were P's; the rest were R's. In terms of animacy, then, Recipients are overwhelmingly more topicworthy than Patients.

4.1.2 Pronominality

Pronouns are more topicworthy than full noun phrases since they always refer to entities whose referents can be recovered or inferred from previous context or from the discourse setting. Do R's and P's differ in the proportions that are pronouns and full noun phrases? The data, given in Table 2, show that they do.

	<u>Recipient</u>	<u>Patient</u>	<u>Total</u>
Pronoun	115 (91%) (59%)	11 (9%) (6%)	126 (100%)
Full NP	81 (30%) (41%)	185 (70%) (94%)	266 (100%)
Total:	196 (100%)	196 (100%)	

Table 2: R's vs. P's as pronouns

Looking at Table 2 in terms of columns, we can see that, while R's are more or less evenly divided between pronouns and full noun phrases, P's (in clauses with R's) tend strongly (94%) to be full noun phrases; only 6% of the P's are pronouns. Looking at Table 2 in terms of rows, it is clear that R's are more topicworthy in that the vast majority (91%) of the pronominal forms occur as R's.

4.1.3 Specificity

A noun phrase is considered to be Specific unless it refers to a class of entities or has no referent.[6] Here are some examples of Nonspecific noun phrases from the data:

(2) A wise and understanding editor, Charles Elliott, gave me valuable advice and encouragement in writing this book.
(NIMiii)

(3) He says Perkins was there at eleven o'clock, which give him ample time to be at Darley by 1.15. (HHC277)

(4) "And might I offer you a little glass of cherry brandy?" (MAV58)

	<u>Recipient</u>	<u>Patient</u>
+Specific	171 (87%)	92 (47%)
-Specific	<u>25 (13%)</u>	<u>104 (53%)</u>
Total:	196 (100%)	196 (100%)

Table 3: Specificity of R's vs. P's

The data in Table 3 show that R's tend strongly to be Specific, while P's are about evenly divided between Specific and Nonspecific. Once again, R's are seen to be more topicworthy: a greater proportion of R's than P's are Specific.

4.1.4 Identifiability

R's and P's were not coded for Identifiability, Proper Nounhood, or Status unless they were coded positively for Specificity. Thus, since many more R's than P's are Specific, it is to be expected that many more R's than P's are topicworthy in terms of these three measures; they are not independent of Specificity. As confirmation, however, the percentages are not without interest.

Identifiability is the presumed ability of the addressee to identify the referent of the noun phrase. Identifiable noun phrases in English can be pronouns, proper nouns, or definite noun phrases. In English Nonidentifiable noun phrases, which are also Specific, are indefinite.

+ +

| | <u>Recipient</u> | <u>Patient</u> |
|---------------|------------------|----------------|
| +Identifiable | 166 (94%) | 75 (82%) |
| -Identifiable | 5 (6%) | 17 (18%) |
| Total: | 171 (100%) | 92 (100%) |

Table 4: Identifiability of R's and P's

+ +

Table 4 shows that among the Specific noun phrases in the data, 94% of the R's are Identifiable. Only 5 of the Specific R's, in other words, are indefinite: that is, Specific but not Identifiable. On the other hand, only 82% of the Specific P's are Identifiable.

4.1.5 Proper Nouns

There were 36 proper nouns in the data, as shown in Table 5. Of these 36, 83% were R's.

+ +

| | <u>Recipient</u> | <u>Patient</u> | <u>Total</u> |
|-------------|------------------|----------------|--------------|
| Proper Noun | 30 (83%) | 6 (17%) | 36 (100%) |

Table 5: R's vs. P's as Proper Nouns

+ +

4.1.6 Status

As mentioned above, Status refers to the 'activation state' of a given noun phrase, the degree to which its referent is presumed to be in the addressee's consciousness at the time of the utterance (see Chafe

(1987)). If the referent is presumed to be in the addressee's consciousness, it is said to be 'Active'. If it is inferrable from previous discourse or its previous mention was rather distant, it is said to be 'Semiactive'. Finally, if it is presumed not to be in the addressee's consciousness at all, it is said to be 'Inactive'.

Table 6 shows that the results for Status are quite striking.

+ +

| | <u>Recipients</u> | <u>Patients</u> |
|------------|----------------------|-----------------|
| Active | 158 (92%) | 51 (55%) |
| Semiactive | 9 (5%) | 30 (33%) |
| Inactive | <u>4 (2%)</u> | <u>11 (12%)</u> |
| Total: | 171 (99% (rounding)) | 92 (100%) |

Table 6: Status of R's vs. P's

+ +

Ninety-two percent of the R's are Active, while only 7% are Semiactive or Inactive. Among P's, however, roughly as many are Active as are Semiactive or Inactive.

4.1.7 Length

Table 7 shows that R's are consistently shorter than P's.

+ +

| | <u>Recipients</u> | <u>Patients</u> |
|--------------|-------------------|-----------------|
| 1 or 2 Words | 176 (90%) | 107 (55%) |
| 3+ Words | <u>20 (10%)</u> | <u>89 (45%)</u> |
| Total: | 196 (100%) | 196 (100%) |

Table 7: Length of R's vs. P's

+ +

It is clear from Table 7 that 90% of the R's are only 1 or 2 words long, while only 55% of the P's are that short.

4.1.8 Summary

In this section, I have compared the topicworthiness of R's and P's along six parameters to support Hypothesis 1, that R's are more topicworthy than P's. We also note that R's are more common in post-verbal position than are P's: in my data the R was in post-verbal position 71% of the time where there was a choice.

Next I will consider Hypothesis 2, that post-verbal position for R's is preferred to end position when the R is highly topicworthy.

4.2 Post-verbal vs. end position for R's

To show that Hypothesis 2 is supported by the data, a modified data base was used, with 11 clauses removed from the original data base. These 11 clauses contain the 11 pronominal P's shown in Table 2; they contained one of the pronominal Patients it or them, which categorically occur post-verbally in most dialects of English and in my data. For example:

(5) I borrowed Roger's pipe, smoked it for a while, and gave it to Mack. (NIM305)

The remaining 185 clauses were the basis for the findings in this section, where I will show that high topicworthiness predicts post-verbal position. The same seven topicworthiness parameters will be considered here; this time, however, I will be comparing figures for post-verbal vs. end position rather than R's vs. P's.

4.2.1 Animacy

Table 8 shows the figures for Animacy among R's.

+ +

| | <u>Post-verbal</u> | <u>End</u> |
|----------|--------------------|----------------|
| +Animate | 131 (99%) | 48 (90%) |
| -Animate | <u>1 (1%)</u> | <u>5 (10%)</u> |
| Total: | 132 (100%) | 53 (100%) |

Table 8: Animacy of R's in post-verbal vs. end position

+ +

Here we see that post-verbal R's are strongly animate: only 1 out of 132 post-verbal R's was inanimate.

4.2.2 Pronominality

Table 9 shows the figures for pronominality.

+ +

| | <u>Post-verbal</u> | <u>End</u> |
|---------|--------------------|-----------------|
| Pronoun | 97 (73%) | 11 (21%) |
| Full NP | <u>35 (27%)</u> | <u>42 (79%)</u> |
| | 132 (100%) | 53 (100%) |

Table 9: Pronominality of R's in post-verbal vs. end position

+ +

From Table 9 we can see that whereas about three-quarters of the post-verbal R's are pronominal, only about one-fifth of the R's in end-position are pronominal.

4.2.3 Specificity

In Table 10 we can see the figures for Specificity for R's.

+ +

| | <u>Post-verbal</u> | <u>End</u> |
|-----------|--------------------|-----------------|
| +Specific | 128 (97%) | 34 (64%) |
| -Specific | <u>4 (3%)</u> | <u>19 (36%)</u> |
| Total: | 132 (100%) | 53 (100%) |

Table 10: Specificity of R's in post-verbal vs. end position

+ +

Here we can see that the vast majority of post-verbal R's (97%) are Specific.

4.2.4 Identifiability

Recall that Identifiability is only relevant for Specific noun phrases. Table 11 shows that none of the Specific R's in post-verbal position were Nonidentifiable.

+ +

| | <u>Post-verbal</u> | <u>End</u> |
|---------------|--------------------|----------------|
| +Identifiable | 128 (100%) | 30 (88%) |
| -Identifiable | <u>0 (0%)</u> | <u>4 (18%)</u> |
| Total: | 128 (100%) | 34 (100%) |

Table 11: Identifiability of R's in post-verbal vs. end position

+ +

Categorically, then, post-verbal R's are Identifiable, that is, either pronominal, definite, or proper, and none are indefinite.

4.2.5 Proper Nouns

Table 12 shows that most of the proper noun R's in the data are in post-verbal position.

+ +

| | <u>Post-verbal</u> | <u>End</u> | <u>Total</u> |
|--------|--------------------|------------|--------------|
| Proper | 22 (73%) | 8 (27%) | 30 (100%) |

Table 12: R's as proper nouns

+ +

4.2.6 Status

Post-verbal R's are overwhelmingly Active, and none are Inactive, as shown in Table 13.

+ +

| | <u>Post-verbal</u> | <u>End</u> |
|------------|--------------------|----------------|
| Active | 124 (97%) | 22 (65%) |
| Semiactive | 4 (3%) | 8 (23%) |
| Inactive | <u>0 (0%)</u> | <u>4 (12%)</u> |
| Total: | 128 (100%) | 34 (100%) |

Table 13: Status of R's

+ +

4.2.7 Length

Finally, post-verbal R's differ from R's in end position in length: the proportion of post-verbal R's which are 1 or 2 words long is markedly greater (95%) than the proportion of R's in end position which is 1 or 2 words long (62%). Table 14 shows the results for length.

+ +

| | <u>Post-verbal</u> | <u>End</u> |
|--------------|--------------------|-----------------|
| 1 or 2 Words | 126 (95%) | 39 (62%) |
| 3+ Words | <u>6 (5%)</u> | <u>14 (38%)</u> |
| Total: | 132 (100%) | 53 (100%) |

Table 14: Length of R's

+ +

Thus, R's in post-verbal position are much more likely to be very short than are R's in end position.

4.2.8 Summary

Most of the R's in end position, then, can be accounted for by virtue of being Nonspecific, Inanimate, Nonactive, inordinately long, or common full noun phrases. But this still leaves 16 end-position R's unaccounted for. These 16 are either pronouns or active proper nouns. Why should such highly topicworthy R's ever occur in end position?

The major factor, accounting for 7 of these 16, is contrastive focus.[7] For example,

(6) She had chosen to tell her story to me, believing that I should be a more sympathetic and lenient audience than the police.

(MAV143) In this example, there is a clear contrast being made between the potential Recipients 'me' and 'the police'.

In the following example, one of the clues to the murderer is the identity of the owner of a given shoe:

(7) He made that shoe for Mr. Alexis all right. (HHC50)
Here the focus is on 'Mr. Alexis', as opposed to other possible (unnamed) candidates.

So our data suggest that contrastive focus, especially in written English, is the primary information flow factor in addition to topicworthiness in predicting end position for R's.

In this section, then, we have seen that post-verbal R's differ from those in end position in ranking consistently higher on the topicworthiness measures that I have proposed. Hypothesis 2 is therefore confirmed.

5 Conclusion

In this study of variation in the expression of Recipients in English, I have provided empirical support for two hypotheses: first, that Recipients outrank Patients in topicworthiness, and second, that, as a group, Recipients in post-verbal position outrank those in end position in topicworthiness. The study thus suggests (i) that post-verbal position for English is the favored site for topicworthy non-subject noun phrases; (ii) grammatical regularities may be shaped by extra-grammatical patterns, in this case by patterns arising from the need to manage the rate at which more and less topicworthy information is imparted. Just as has been demonstrated for English 'particle shift' (see Chen (1986)), then, what appears to be a grammatical option has been shown to be strongly determined by considerations of how speakers manage the flow of information.

Notes

1

I would like to thank Wallace Chafe, Talmy Givon, Robert Kirsner, and Tsuyoshi Ono for helpful comments on an earlier version, some of which I could not incorporate because of space limitations, and Sherri Arbogast and Paula Doms for their help with the research reported here.

2

Erteschik-Shir does not discuss how one would determine which constituents speakers intend to direct their hearers' attention to.

3

See Givon (1979), (1983), (1984a, b). 'Topicworthiness' can and perhaps ought to include other parameters, such as 'likely to remain in active consciousness', but space limitations don't allow me to pursue any of these here. For the term 'active', see Chafe (1987); 'active' contrasts with 'semiaactive' and 'inactive'; these are the three possible 'activation states' of a concept.

4

Cf. Comrie (1981:61), summarizing criteria for determining grammatical relations: 'In English, then, there seems to be no evidence for, and circumstantial evidence against, the existence of a distinct grammatical relation of indirect object.'

5

All of the results reported here are significant at the level of $p < .001$; for some of the tables, standard chi-square tests could not be run because of the small cell size. I wish to thank Gordon Smyth and Jyoti Zulkikar for statistical advice.

6

The coding of Specificity proved to be fairly straightforward for most cases; the most problematic instances I encountered were the language names 'American Sign Language' and 'sign language'. I considered these to be Specific.

7

The other 9 instances of highly topicworthy R's in end position (about 5% of the data) remain; the factors which account for them have not been uncovered by the measures I have considered here. Since the hypotheses are stated in terms of probabilistic tendencies, however, they are strongly supported by the data in spite of these 9 counterexamples.

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A Quantitative Perspective on the
Grammaticization of Evidential Parentheticals in English

Sandra A. Thompson and Anthony Mulac
University of California, Santa Barbara

Everybody has to believe something. I believe
I'll have another beer.

- Bumper sticker in Santa Barbara, CA

1. Introduction and Background¹

The focus of this paper is the interplay between the phenomenon known in English grammar as 'that-deletion', illustrated in (1) and (2), and the grammaticization of 'epistemic phrases' (EPs), illustrated in (2) and (3):

(1) I think that we're definitely moving towards being more technological (10.16)²

(2) I think ∅ exercise is really beneficial, to anybody. (1.31)

(3) it's just your point of view you know what you like to do in your spare time I think. (41.77)

Examples such as (1) - (3) have generally been thought of in terms of a process of 'that-deletion', i.e., an alternation between constructions like (1) and (2), with and without that. The purpose of this paper, however, is to suggest that what has been thought of as 'that-deletion' is better understood as a alternation between constructions like (1), with in which I and think are main subject and verb, with the that introducing a complement clause, and constructions like (2) and (3) in which I think is an epistemic phrase, expressing the degree of speaker commitment (Palmer (1986:51), Traugott (1987)), functioning roughly as an epistemic adverb such as maybe with respect to the clause it is associated with.

Further, we will argue that this alternation can be viewed as a type of grammaticization. That is, unlike much work on the syntax of English of the 1960's and 70's, we will not take cases such as (1) and (2) to illustrate an 'optional' process of deleting that, but will take cases such as (2) and (3) as grammaticized versions of cases such as (1).

To support our point we will consider the role of discourse frequency in the grammaticization process. Specifically, we will show that the discourse frequency of patterns like (2) is directly related to the frequency of patterns like (3). That is, analysis of ordinary spoken conversation shows that forms such as (1) alternate with forms such as (2) and (3) in a subtle and statistically significant way.

We suggest that an appreciation of this relationship provides a deeper understanding of the process of grammaticization and its reliance on recurrent discourse patterns.

The relationship between frequency of tokens in text and the emergence of grammar has been pointed out in several places in the last decade or so, starting with Givón (1979), (1984), and including the important contributions of Du Bois (1985), (1987), Durie (1988), Faltz (1987), and Hopper (1987), (1988). We see our study as a contribution to this body of

writing, and as confirmation of the principle that 'recurrent patterns in discourse tokens exert pressure on linguistic types' (Du Bois (1985:359-360)).

McDavid (1964), Elsness (1984), and Underhill (1986) have drawn attention to the sorts of factors that seem to be involved in the use vs. non-use of that in written English.³ Our purpose in this paper, however, is to show that there are certain facts that can only be discovered if we look at conversational language; in particular, it is only with conversational data that we can find clues to the grammaticization of EPs.

Emonds (1969), (1973), (1976), Hooper (1975), and Hooper and Thompson (1973) were among the first to relate the use of that to the relationship between the 'main' verb and the 'complement'. Emonds refers to constructions such as (3) in terms of a rule which he called "Complement Preposing", where the erstwhile "complement" becomes the "main clause.

Underhill (1987), using articles from major newspapers, pursues this line of reasoning, making a strong case in favor of the following hypothesis:

The deletion of that causes the lower clause to cease behaving like a self-contained embedded clause.

Underhill's study shows the following:

a: That is deleted when the subject of the complement clause is the topic of the discourse; that is retained when the subject of the main clause is the topic.

b: That is deleted when the writer makes or endorses the assertion of the complement clause; that is retained when the writer does not necessarily endorse the assertion, but attributes it to someone else.

Underhill is thus claiming that these discourse facts can be accounted for in terms of his hypothesis: where the embedded clause loses much of its embeddedness, its subject, rather than the main clause subject, tends to be the topic of the discourse, and its content, rather than that of the main clause, tends to be what the writer is endorsing.

We would suggest that this line of reasoning can be taken one step further: these bleached-out verbs and their subjects behave very much like epistemic morphemes in other languages, to the point of being 'transportable' to positions other than that which they could occupy if they were only functioning to introduce a complement, as seen in (3) above.

2. Methodology

The transcripts analyzed for this study come from 116 8-minute recorded conversations between university students. For the purposes of a separate series of studies, each student was randomly paired with two individuals he or she did not know well, creating a mixed-sex and a same-sex dyad. In this way, 58 male/female, 29 male/male, and 29 female/female dyads were formed. They were asked to discuss at least one of several topics provided them, such as "What are the qualities of a good roommate?", and "What do you do to relieve school tension?"

The recordings were transcribed orthographically and verified by trained

observers. A computerized word count showed that the nearly 15 1/2 hours of conversation resulted in more than 240,000 words spoken.

The first author analyzed the transcripts for instances of the target construction, with or without that.⁴ The second author provided a reliability check by independently coding 20% of the transcripts. The point-by-point percent of agreement between the two of us was 97%. In all, 1431 instances of the target form were identified and coded for selected parameters, including whether or not a that occurred.

What we considered to be the target construction, then, were all occurrences of 'main' subject and verb, as in (1) and (2), which could occur with that, whether or not the that was present. We also counted and coded separately all epistemic parentheticals, as in (3). Thus, although we are claiming that the grammaticization process goes from examples like (1), with that, to examples of EPs like (2) and (3), the presentation of our findings will contrast 'target' constructions like (1) and (2), with EPARs like (3).

Because of their function as discourse markers (see Schiffrin (1987)), we did not count occurrences of you know or I mean, as in:

(4) An' I'll get everything accomplished and this and that and I may even do good. You know but it's just all the work that you realize that you have to do before Monday morning at 8 o'clock. (14.375)

(5) B: Food's terrible, huh?

A: Well, it's not actually that bad. It all depends on your, on your taste. I mean, how well, what you're used to I mean you're used to really fine cuisine at home you're not going to be able to tolerate dorm food. (15.31)

(For discussion of you know, see Ostman (1981).)

3. Terminology

For the remainder of this paper, we will refrain from using the term 'that-deletion' because it connotes an inappropriate processual metaphor. For ease of reference, we will continue to refer to 'main' and 'complement' clauses without quotation marks. These should be taken as simply mnemonic labels, however, as our central point is that the blurring of the distinction between 'main' and 'complement' clause is precisely what is involved in creating the conditions which are giving rise to EPs. When we use the terms 'subject' and 'verb', we will be referring to the 'main' clause subject and verb, not the 'complement' clause subject and verb. As mentioned above, we will use the term 'target' to refer to subjects and their verbs in pre-complement positions, with or without that (illustrated by (1) and (2)), where they could be analyzed as introducing the complement.

The term 'verb type' will occasionally be used in implicit opposition to 'verb token'.

The term 'epistemic phrase' (EP) will be used to refer to the combinations of subject + verb, either in contexts such as that of (2), i.e., without that and before a clause that could be analyzed as its

complement, or contexts such as that of (3), i.e., in some position other than before a clause that could be considered its complement. Thus, I think will be considered a complement-introducing main clause in (1) above, but an EP in (2) and (3).

Finally, the term 'epistemic parenthetical' (EPAR) will refer only to cases such as (3), i.e., to the phrase consisting of a subject and a verb which appears in some position other than before a clause that could be considered its complement.

4. Hypothesis

The central hypothesis of this paper can be stated as follows:

EPs in English are grammaticized forms of subjects and verbs introducing complement clauses. The use of EPs as EPARs is evidence of this grammaticization.

The evidence supporting this hypothesis is of two types:

1. Frequency: there is a direct relationship between the frequencies of target subjects and verbs occurring in target clause EPs without that and the frequencies of subjects and verbs occurring as EPARs. That is, those subjects and verbs occurring most frequently without that are precisely those which occur most frequently as EPARs.
2. Semantics: the meanings of the verbs most frequently used as EPs are those associated with belief as a mode of knowing (see Chafe (1986:263, 266)).

In other words, the evidence suggests that the most frequent subjects and verbs occurring with 'that-less' 'complements', as in (2), have been reanalyzed by speakers as epistemic phrases, which have a degree of freedom not possible for subject-verb combinations; in particular they are 'free' to occur in other positions, just as other epistemic phrases, such as epistemic adverbs, do in English.⁵

It is clear that the term 'grammaticization' is being used here in a sense somewhat extended from that assumed first posited by Meillet (1912): "attribution du caractere grammatical a un mot jadis autonome" (p. 13). That is, whereas Meillet focussed on grammaticization of bound morphemes from previously free forms, our use of the term is more in line with other research, e.g., Bybee and Pagliuca (1985), (1987), Li and Thompson (1974), and Marchese (1979), and many papers in this volume, which is concerned with what Hopper (p.c.) has called "the co-opting by languages into their grammars of lexical elements". That is, this research broadly involves category shifts from more 'lexical' to more 'grammatical', including such processes as the bleaching and narrowing of free verbs to free markers of mood and free prepositions. The only difference between the case we are examining here and those discussed in the earlier literature is that we are here dealing with the grammaticization of a phrase rather than a single lexical item. In every other respect, we suggest, they are entirely analogous.

According to Langacker's (1977) treatment of reanalysis, the phenomenon

we are concerned with can be considered as a type of "semantic reformulation", specifically "constructional reformulation" (p. 85), that is, a reanalysis involving a shift in semantic and syntactic categories affecting an entire clause or sentence. In our case, this shift involves the periphrastic verb-subject combination I think becoming a single element behaving as a member of the grammatical category of a verb.

This grammaticization process thus represents a kind of category shift, from subject-verb phrase to EP, the latter having distributional properties not possible with the former. As mentioned above, these epistemic phrases can be thought of as similar to epistemic particles in other languages. For example, Wallace Chafe (p.c.) notes that the Seneca particle iiwi is always glossed as 'I think' by speakers who are bilingual in Seneca and English. And Robert Kirsner (p.c.) reports that the Afrikaans glo 'possibly' appears to have followed precisely the pathway we are positing for parenthetical I think: glo is etymologically derivable from glo'k, itself from the parenthetical glo ek (literally) 'believe I'.

As Du Bois (this volume), however, points out, restricting our understanding of grammaticization to a move from the lexicon into the grammar may cause us to miss the fact that grammaticization always involves the reanalysis of one kind of pattern (in our case, a frequent collocation of subject and complement-introducing verb) as another kind of pattern (in our case, an epistemic phrase with no syntactic complement-introducing properties). As Du Bois argues, grammaticization can usefully be regarded as a reanalysis of a pattern in the domain of language use as a pattern in the domain of language structure.

We will return to the issue of what EP's reveal about the nature of grammaticization after examining the evidence that supports our hypothesis that EPs are grammaticized versions of complement-introducing subject-verb combinations.

5. Results

In his discussion of aspectogenesis in Indo-Aryan, Hook (this volume) provides a striking demonstration that an increase in a item's text frequency is an important concomitant of its grammaticization. In a similar way, we wish to show that out of a range of possible forms, only a small subset occur with great frequency in the data, and these are the very forms that show up grammaticized as EP's.

5.1 Verbs

Tables 1 and 2 show that think and guess account for the majority (65%) of the target verb types, and the vast majority (85%) of the EPARs.

[Table 1 about here]

[Table 2 about here]

We note that there are 61 different target verb types altogether in our data; it is striking that think and guess account for 65% of all the target verb tokens, while the other 59 verbs are spread over the remaining 35%.

On the other hand, there are only 18 verb types occurring as EPARs; here the same two verbs, think and guess, account for 85% of the total EPAR tokens. This illustrates one of Hopper's grammaticization heuristics (this volume), SPECIALIZATION:

... out of a cluster of forms which are semantically differentiated but which have a similar distribution just a few, or perhaps only one, become singled out for development as grammatical morphemes.

That is, as the function of a grammaticized element narrows, so does the variety of forms.

Now we observe that think and guess also occur as target verbs without that significantly more often than the rest of the verbs taken together, as shown in Table 3.

[Table 3 about here]

Table 3 shows that 91% of all tokens of target think occur without that, and 99% of all tokens of target guess occur without that. For all other verbs, only 76% of target tokens occur without that.⁶

Comparing Table 1 with Table 3, then, we see that the two most frequent target verbs in the data also occur significantly more often without that than the other verbs do.

Thus, as far as verbs are concerned, the frequency conditions for grammaticization are met: each of the two most frequently occurring target verbs, think and guess, also occurs without that more frequently than the aggregate of other verbs. And it is just those verbs that occur most frequently as EPARs.⁷

5.2 Subjects

Tables 4 and 5 show the percentages of subjects occurring with target verbs and in EPARs.

[Table 4 about here]

[Table 5 about here]

The proportions are similar to, but even more striking than, those found for verbs. I and second person you account for the vast majority (88%) of the target verb subject tokens, and for the overwhelming majority (99%) of the EPAR tokens.⁸ Moreover, in both cases I is more frequent than you, which is in turn more frequent than all others.

As with verbs, we can now show that these same two subjects, I and you, occur more frequently with target verbs without that than do other subjects; see Table 6.

[Table 6 about here]

Table 6 shows that I and you occur in target clauses without that more frequently than is the case for other subjects. And, just as with verbs,

I and you are each significantly more likely ($p < .001$) to occur in target clauses without that than is any other subject.

Our findings for verbs have been confirmed with respect to subjects, then, and we see that the frequency conditions for grammaticization are again met: the two most frequently occurring target subjects, I and you, also occur without that more frequently than do all other target subjects. And it is just those subjects that occur most frequently in EPARs.

Furthermore, these results support our hypothesis in a much stronger way. It is no accident that the most frequently occurring epistemic subjects are I and you: it has often been noted that markers of evidentiality and epistemicity are skewed towards first person singular declaratives and second person questions.

For example, Woodbury (1986:192), in a discussion of evidentiality in Sherpa, points out that:

The first person vs. nonfirst person distinction is widespread in Sherpa, but the term 'first person' is something of a misnomer. In the interrogative all so-called first person phenomena are associated with second person. (Emphasis added [ST & AM]).

In his discussion of subjectivity in language, Benveniste (1971: 228-9) notes that certain verbs do not have the property of "permanence of meaning" when the person of the subject is changed: in particular, verbs of "mental operations", such as believe, when used with I, "convert into a subjective utterance the fact asserted impersonally."

Similarly, in his discussion of 'parenthetical verbs' in English, Urmson (1963:222) notes:

Part of what I design to show is how differently these verbs [i.e., what he calls "parenthetical" verbs, e.g., think and believe - ST & AM] are used in the first person present and in other persons and tenses.)

Neither Benveniste nor Urmson considered interrogative you with the verbs in question, but our data suggest that it forms a class with I in the present tense, and that the two together must be distinguished from all other persons and tenses.

All of the EPARs with you are questions, and 55 out of 67 (82%) of the target clause you's are in questions. In the examples below, using intonation as the criterion⁹, (6) illustrates an EPAR question, (7) a target clause question, and (8), just for comparison, a target clause you which is not a question:

(6) What's the point of that do you think? (110.45)

(7) So what do you think you're going to major in now that you're down here? (108.133)

(8) (talking about dormitory regulations on alcohol)

A: ... they probably shouldn't have any rules at all but

B: [(laughs) you think it should be wide open.]

A: [If they're legally responsible] (95.274)

Finally, just as we saw that verb semantics interacts with frequency for verbs in the grammaticization of EPs, we note that the discourse difference between first and second person reference interacts with frequency for subjects. Table 5 shows that I outranks you in EPAR's 83% to 5%, but Table 6 shows that I and you are almost identical in percentage of tokens without that (91% vs. 90%). Again, if frequency were all that were involved, this would be an unexpected result. However, the figures make sense if we consider that I and you are roughly equally likely to be used with verbs introducing complements in other roles besides indicating epistemicity. For example, in 'I told her that we were going swimming', epistemicity is not at issue. These non-epistemic uses are more likely to occur with that, which predicts that I and you should have roughly the same percentage of tokens with that, and that is just what we find.

5.3 I think

Further support for our claim can be found in the behavior of the phrase I think. Since I is far and away the most frequent target subject in the data and think is far and away the most frequent target verb, and since they both occur 90% of the time without that, it is natural to ask whether the target phrase I think is significantly more likely to occur without that than all other combinations; Table 7 shows that it is.

[Table 7 about here]

6. Are EPs an example of grammaticization?

EPs provide an intriguing illustration of grammaticization, viewed in the broad sense discussed at the beginning of this paper. In contrast to many of the papers in this volume, we suggest that ours focusses on the beginning stages of a grammaticization process.

It is not a "textbook case" study in grammaticization, however, partly because, as mentioned earlier, I think is a phrase rather than a single lexical item, and partly because it is not clear what the grammatical status of EP's is. Our position is that although EP's do not form an obvious lexical category, they can be argued to comprise a grammatical sub-category of adverbs; in this sense they can be viewed as similar to auxiliaries, which also form a grammatical category resulting from the grammaticization of lexical elements.

Another problem with the case we are examining here is that we are describing a process which is largely attested only synchronically; available evidence on the history of the relevant constructions does not allow us to say anything definitive about whether the synchronic alternation between "main clause subject + verb" and EPs has a diachronic parallel (Traugott, personal communication). However, again, what we consider significant about this phenomenon is that it exemplifies the process of something more "lexical" becoming something more "grammatical".

An interesting question is whether the relationship between target

subjects and verbs and epistemic phrases might be best described as a process of lexicalization rather than of grammaticization. Evidence in favor of this hypothesis includes the fact that the input to the EP is a syntagm consisting of subject + verb, rather than a single lexical item. Thus an EP such as I think might be seen as analogous to a word such as today (<OE to + daege). However, the fact that EP's are still available for ordinary negation and questioning ('It's cute, don't you think?') provides strong evidence against such a hypothesis.¹⁰

As support for our position that EP's are instances of grammaticization in spite of their non-canonical nature, we note that, as described in the Introduction to this volume, grammaticization is a theory of "the fixed and the less fixed in language, ... of the organization of categories and coding", and that "it foregrounds the tension between relatively unconstrained lexical expression and more constrained morphosyntactic coding". The process of EP-creation in English, where a more lexical phrase becomes used as a distinct category with a more restricted meaning and different privileges of occurrence, is precisely this type of process.

As further support for our hypothesis, we can show that the four principles of grammaticization discussed by Hopper (this volume), (to appear) apply to the process of EP formation.

Hopper's first principle is ACCUMULATION, the coexistence of several layers of a set of related grammatical phenomena such that the older forms live on in the language alongside the newer grammaticized versions. This principle nicely describes the fact that both subject-verb phrases and EPs co-exist in contemporary English.

Related to this first principle is the second, DIVERGENCE, the tendency for the lexical source to change according to predictions based on its behavior as a lexical item. In our case, DIVERGENCE provides an account of the treatment by speakers of lexical I think as an ordinary subject-verb combination; in the progressive, for example the auxiliary am appears, as in 'I am thinking that it's time to go'.

Hopper's third principle, SPECIALIZATION, refers to the singling out of just a few, or perhaps one, of a cluster of forms for grammaticization. As shown above, EP formation illustrates this principle as well: out of 61 different verb types found in subject-verb combinations, only 18 show up as EP's.

Hopper's fourth principle, PERSISTENCE, refers to the retention of vestiges of the earlier lexical meaning in the grammaticized form. That this principle is at work in the formation of EPs can be seen clearly in the differential meanings of the EPs I think and I guess: I think is a stronger assertion of belief than I guess. This is traceable to the difference between think and guess as verbs: guess implies an assertion based on little or no evidence, and hence less commitment to a proposition than think does, as seen in such locutions as 'Guess how many people came to the open house.'

According to Hopper's four principles of grammaticization, EPs, then, appear to be straightforward instances of grammaticization, suggesting that the range of processes legitimately covered by this term may be somewhat broader than has been recognized.

Once again, however, we want to stress the point made in Du Bois (this volume), that grammaticization involves not just the reanalysis of lexical

material as grammatical material, but also the reanalysis of a discourse pattern as a structural pattern. We have just such a reanalysis in the creation of a class of EP's clearly modelled on the most frequent collocations of epistemic target verbs and their subjects.

7. Conclusions

We have examined the evidence in favor of our claim that EPs in English are grammaticized forms of subjects and verbs introducing complement clauses. The most frequent target clause subjects and verbs are just those which are most frequently found as EPAR expressions, which supports the claim that grammaticization is dependent on high token frequencies. In this case, the frequent occurrence of I (in declaratives) and you (in questions) without that in 'main clause' constructions has led to their re-interpretation as epistemic phrases with verbs expressing belief, such as think and guess (cf. Chafe (1986)). As epistemic phrases, then, these combinations are free to float to various positions in the clause to which they are providing testimony, as other epistemic particles in English do, such as maybe. Again, we found strong correlations between the frequency of the forms found in these EPAR's and the frequency of those found in target epistemic phrases without that.

In this paper, we have considered grammaticization from the point of view of the behavior of EPs, a non-prototypical instance of grammaticization. Yet the process described has all the properties of less controversial instances of grammaticization.

With this study, then, we hope to have extended the understanding of the term 'grammaticization' to include phenomena such as these, and to have underscored the intimate relationship between discourse frequency patterns and the emergence of grammar.

1. We would like to thank the following people for helpful comments on earlier versions of this paper: Edith Bavin, Dwight Bolinger, Joan Bybee, Wallace Chafe, John Du Bois, Suzanne Fleischmann, Julie Gerhardt, David Hargreaves, Paul Hopper, C. Douglas Johnson, Tsuyoshi Ono, William Pagliuca, Gisela Redeker, Nathan Salmon, Arthur Schwartz, Dan Slobin, Timothy Shopen, and R. McMillan Thompson. We are particularly grateful to Elizabeth Traugott for her careful and thoughtful comments, which have contributed greatly to the clarity and substance of this paper. None of these people necessarily agrees with the interpretation we've given to their input.

2. The numbers in parentheses indicate dyad number and line number in our data base.

3. Pilot studies confirm that some of these factors are at work in spoken English as well. Space limitations prevent us from presenting a number of interesting findings not directly related to the issue of grammaticization; for more discussion, see Thompson and Mulac (in preparation).)

4. We are using the term "target construction" simply to refer to the "construction in question".

5. Gramley (ms) relates this freedom to an iconic principle according to which verbs of "propositional attitude" (= our epistemic verbs) are "semantically" the most distant from their complements. Gramley doesn't relate this point to Haiman's (1983), (1985) discussions of iconicity, but it is clearly an instance of Haiman's general observations on iconicity and language.

6. Not only is the three-way comparison significant at the level of $p < .001$, but chi-square pair-wise comparisons also show that think and guess are each significantly more likely (at the level of $p < .001$) to occur without that than is the complement set of all other verbs.

7. Dwight Bolinger and Gillian Sankoff have pointed out to us that the nature of our data base, conversations in which speakers were expressing opinions, may have influenced the proportions of verbs used. One might have expected more occurrences of bet, figure, or suppose in less restricted conversation, for example. We acknowledge this possibility, but note that our hypothesis is strongly confirmed by the frequency correlations, independent of verb types, described in this section.

8. Our coding distinguishes second person you from generic you. From here on, whenever you is mentioned, we mean second person you; generic you is included in the 'other' category.

9. We follow the standard transcription practice of indicating rising intonation with a question mark and falling intonation with a period.

10. Intriguingly, though, R. Keesing notes (p.c.) that Solomon Pidgin has an epistemic monomorphemic adverb [atiŋ] from English I think.

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TABLES

Table 1: The most frequent 'main' verbs out of 61 main verb types

| | | |
|-------|------------|-------|
| think | 681 | (53%) |
| guess | <u>150</u> | (12%) |
| Total | 831 | 65% |

Table 2: The most frequent verbs as Evidential Parentheticals (EPARs)

| | | |
|-------|-----------|-------|
| think | 76 | (47%) |
| guess | <u>62</u> | (38%) |
| Total | 138 | 85% |

Table 3: Occurrence of that with think vs. guess vs. all other verbs

| | <u>-that</u> | <u>+that</u> | <u>Total</u> |
|-------|------------------|------------------|-------------------|
| think | 620 (91%) | 61 (9%) | 681 (100%) |
| guess | 148 (99%) | 2 (1%) | 150 (100%) |
| Other | <u>345</u> (76%) | <u>109</u> (24%) | <u>454</u> (100%) |
| Total | 1113 (87%) | 172 (13%) | 1285 (100%) |

Chi-square (1, N = 1285) = 10.20, p. < .001

Table 4: The most frequent subjects with 'main' verbs

| | |
|--------|------------|
| I | 83% |
| you 2p | 5% |
| other | <u>12%</u> |
| Total | 100% |

Table 5: The most frequent subjects in Evidential Parentheticals (EPARs)

| | |
|--------|-----------|
| I | 95% |
| you 2p | 4% |
| other | <u>1%</u> |
| Total | 100% |

Table 6: Occurrence of that with I vs. you vs. other subject

| | <u>-that</u> | <u>+that</u> | <u>Total</u> |
|-------|--------------|--------------|--------------|
| I | 958 (90%) | 110 (10%) | 1068 (100%) |
| you | 61 (91%) | 6 (9%) | 67 (100%) |
| other | 102 (64%) | 57 (36%) | 159 (100%) |

Chi-square (2, N = 1294) = 79.19, p < .0001

Table 7: Occurrence of that with I think vs. with all other combinations

| | <u>-that</u> | <u>+that</u> | <u>Total</u> |
|---------|--------------|--------------|--------------|
| I think | 549 (92%) | 49 (8%) | 598 (100%) |
| other | 479 (87%) | 72 (13%) | 551 (100%) |

Chi-square (1, N = 1149) = 7.23, p < .01