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FOREWORD

The Department of Linguistics of the University of Victoria is pleased to present Volume 9 of the *Working Papers of the Linguistics Circle of the University of Victoria (WPLC)*. The articles appearing in this issue represent current research on language and linguistics at the University of Victoria. It is the editorial policy of the *Working Papers* to include an even representation of work by graduate students and established scholars.

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A PSYCHOLINGUISTIC IMPLICATION OF ACCENTUAL PHRASING IN JAPANESE

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1. INTRODUCTION

It is commonly recognized that in Japanese there are different types of prosodic units above the level of word: utterance (sentence), intermediate (major) phrase, and accentual (minor) phrase (McCawley 1968; Poser 1984; Pierrehumbert and Beckman 1989).

Acoustically, the utterance is characterized as the domain of declination which is about 10 Hz per second (Poser 1984). The intermediate phrase is the domain of catathesis or iterative application of pitch compression caused by an accent (Pierrehumbert and Beckman 1989). The accentual phrase is, then, the domain of an initial rise and the possible occurrence of an accent, which is an acute pitch shift from H tone to L tone.

The pitch contour in Figure 1 demonstrates these prosodic units. The whole contour is that of the utterance which consists of two intermediate phrases; *ao'i yama-ma'de* 'to the blue mountain' and *ooi'sogi-de ikima'suka* 'do you quickly go?'; of these two, the initial intermediate phrase is a good example showing that it further consists of (two) accentual phrases, the second of which is catathesized due to the accent in the preceding accentual phrase, ao'i 'blue'.

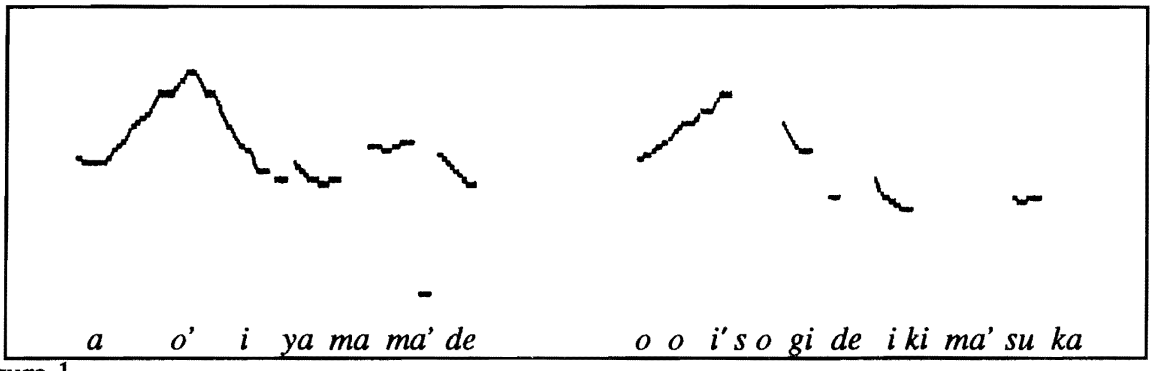

Figure 1

As part of designing a prosodic phrasing model which assists a speech-synthesis program to create natural pitch contours in Japanese (Miyamoto 1989), an acoustic experiment is conducted to investigate the conditioning factor for accentual phrasing. Our basic assumption is that, unlike intermediate phrasing, which is the complex interaction of syntactic, semantic, and extra-linguistic factors (cf. Nespor & Vogel 1986), accentual phrasing is conditioned either by the syntactic configuration or the phonological configuration of a given intermediate phrase.

Two interesting facts are found in our acoustic experiment. First, the conditioning factor for accentual phrasing is found to be the *underlying* accentual configuration of the phrase rather than the syntactic or surface accentual structure. Second, speakers are sensitive to some sort of a look-ahead mechanism in accentual phrasing.

2. ACCENTUAL BEHAVIOUR OF JAPANESE POSTPOSITIONS

Prior to reporting on the experiment on accentual phrasing, the accentual behaviour of Japanese postpositions is discussed because they play roles in accentual phrasing. In combinations of postpositions and their host nouns, many of the postpositions exhibit peculiarities in accentual behaviour. These accentual behaviour of postpositions are well documented (e.g., Hirayama 1960; NHK 1966; McCawley 1968, 1977; Higurashi 1983; Poser 1984). Table 1 provides a convenient, though not exhaustive, summary of accounts on the accentual behaviour of non-monomoraic postpositions.

Table 1
Accentual types of non-monomoraic postpositions shown in the forms with the accented host, *i'noti* "life" and the unaccented host, *miyako* "capital".

(1) *ma'de* -type [+Left-winning]: an unmarked type which obeys the left-win rule; e.g. *de'su* "copula", *yo'ri* "from", *ba'kari* "only".

i'noti + ma'de → *i'noti-made*

miyako + ma'de → *miyako-ma'de*

(2) *kara* -type [+Anonymity]: an unaccented counterpart of the type (1); all the monomoraic postpositions should also be included in this type.

i'noti + kara → *i'noti-kara*

miyako + kara → *miyako-kara*

(3) (a) *gu'rai* -type [+Deaccenting]: a marked type.

i'noti + gu'rai → *inoti-gu'rai*

miyako + gu'rai → *miyako-gu'rai*

(b) *jyuu* -type [+Deaccenting]; an unaccented counterpart of the *gu'rai* type postpositions.

i'noti + jyuu → *inoti-jyuu*

miyako + jyuu → *miyako-jyuu*

(4) *'sika* - type [+Preaccenting (partial)]: a marked type of postposition.

i'noti + 'sika → *i'noti- sika* (obeying the left-win rule)

miyako + 'sika → *miyako'-sika*

As listed in Table 1, postpositions may be categorized into four major types; (1) [+Left-winning] postpositions; (2) [+Anonymity] postpositions; (3) [+Deaccenting] postpositions; and (4) [+Preaccenting] postpositions. The first type, [+Left-winning] postposition is an unmarked case. Some of the non-monomoraic postpositions, such as *ma'de* "to", *de'su* "copula", or *ba'kari* "only" are classified in this type. If a [+Left-winning] postposition has any accent-conflict, i.e., when both the host and the postposition are accented, it is the host's accent which is realized, and the accented postposition loses its accent, as in *i'noti + ma'de → i'noti-made*. If there is no accent-conflict, an available accent is realized as the accent of the unit (noun + postposition), as in *miyako + ma'de → miyako-ma'de*.

The second type of postposition marked by [+Anonymity] is the unaccented counterpart of [+Left-winning] postpositions, and being a part of a host noun, they are never independent in accentuation and never cause any accent-conflicts. All the monomoraic postpositions, such as *o* "accusative", *ni* "dative", or *wa* "topic marker" should also be included in this type.

The third type of postposition is marked by the feature [+Deaccenting] and postpositions, such as, *gu'rai* "as much as", *da'ke* "only", or *jyuu* "throughout" are classified in this type. In the case of a [+Deaccenting] postposition, the accent of the host will not be realized because of the predominant power associated with the [+Deaccenting] postposition which deaccents the accent on its left, as in *i'noti + gu'rai → inoti-gu'rai.* The unaccented [+Deaccenting] postpositions, *jyuu* and *dake* , create an unaccented accentual phrase regardless of the accentuation of the host, as in *i'noti + jyuu → inoti-jyuu* ; *miyako + jyuu → miyako-jyuu.*

The fourth type of postposition is marked by the feature [+Preaccenting] because the postposition of this type places an accent on the last syllable of the preceding host if the host does not have an accent (i.e., unaccented) as in *miyako + 'sika → miyako'-sika* . If the host is accented, however, *'sika* obeys the left-win rule as in *i'noti + 'sika --> i'noti-sika.*

3. EXPERIMENT ON ACCENTUAL PHRASING

3.1. Aim of Experiment

As mentioned in Introduction, the main aim in conducting an acoustic experiment is to obtain a generalization about accentual phrasing. More precisely, we would like to know whether it is a syntactic configuration or an accentual configuration which determines how an intermediate (major) phrase is parsed into accentual (minor) phrases. For example, given the phrase, *ao'i + oma'me + ma'de* , 'to the blue beans', is it possible to predict how many accentual phrases are created from the phrase? Although unlikely, will the phrase be uttered with two interphrasal boundaries, creating three accentual phrases in the phrase because there are three underlying accents? Or, more likely, will the phrase be uttered with just one interphrasal boundary (L%) which is inserted before the noun, creating only two accentual phrases, as *ao'i* L% *oma'me-made* because there are two surface accents? Or, will the whole phrase be realized as just one accentual phrase, having a culminative accent at the leftmost unit, *ao'i* ? Or, will it be that accentual phrasing is not conditioned by the accentual configuration, but by the syntactic configuration: modifier + noun + postposition? Of course, there ought to be variations in phrasing but also there ought to be a general trend in accentual phrasing which ought to be determined either by a phonological or syntactic condition. It is the trend and the condition of the accentual phrasing which are what we would like to elicit from the experiment

3.2. Procedure.

Table 2 is the list and the possible combinations (4 * 2 * 4 = 32) of lexical items used as stimuli in the experiments. The phrases made of the possible combinations of these lexical items are set in a carrier sentence; "····· *te-ga todokima'su* ," (I can reach out my hand for ·····) except for the possible combinations with *gu'rai*. The phrases with *gu'rai* are placed in a carrier sentence, "····· Aj- N *wa arima'sen* " as "*ao'i omame-gu'rai ao'i oma'me-wa arima'sen* ," (there are no beans which are as blue as the blue beans). It is the meaning of *gu'rai* which demands the different carrier sentence.

Table 2
A list of stimuli used in the experiments examining accentual phrasing

Modifier		Noun		Postposition	
ao'i	"blue"			*ma'de*	"to"
omoi	"heavy"	*oma'me*	"beans"	*gu'rai*	"as much as"
a'ni -no	"brother's"	*nimame*	"cooked beans"	*jyuu*	"all over"
ane -no	"sister's"			*ni*	"to"

Pierrehumbert and Beckman (1989) have found that a focused item attracts an intermediate phrase boundary immediately before the focused item. Warkentyne (1978) reports that in Japanese focus is generally placed on the "argument " which immediately precedes a (sentence final) verb. The combination of these two individual claims assures us that all the stimuli will be realized as an intermediate phrase, having an intermediate phrase boundary between the end of a stimulus phrase and the beginning of a carrier sentence which consists of an NP argument and a verb.

The stimuli are organized in the following manner. In the noun slot, there are two pairs of modifiers, each of which constrasts an accented modifier with an unaccented modifier, having similar phonemic configurations. The same with the noun slot: the accented noun, *oma'me* , is contrasted with the unaccented noun, *nimame* , in that both nouns have the same number of morae as well as similar phonemic configurations. In the postposition slot, *ma'de* represents [+Left-winning] postpositions; *gu'rai* is an accented postposition marked by the feature [+Deaccenting]; and the postposition, *jyuu* , is an unaccented [+Deaccenting] postposition. The [+Preaccenting] postposition, *'sika* , is not included in the list because its segments, /s/, devoiced /i/, and /k/ are all invisible in F0 analysis. *Ni* represents monomoraic postpositions.

These stimuli embedded in the carrier sentences were written, in random order, on sheets of paper in Japanese. Each sentence was paired with its echo question. The data for analyses were taken only from the answers because, being old information, none of the items in the phrases in the answers should have received any narrow-focus. The total of 160 (((4 * 2 * 4 *) * 5) = 160) utterances were recorded by five female subjects who were the speakers of Standard Tokyo Japanese. The subjects were requested to utter the stimuli in a well articulated manner.

Measurements were taken using MSL (Micro Speech Lab) and MSLPITCH which were IBM-PC-compatible speech analysis programs developed at the Centre for Speech Technology Research, Victoria, Canada. The recorded items were analyzed with a 10 bit, 10k/sec sampling rate.

4. RESULTS

The results of the experiment are summarized as Table 3 and Table 4. Table 3 is a summary of the phrasing of all the possible combinations with the accented noun, *oma'me* and Table 4 is a summary of the phrasing of those with the unaccented word, *nimame* . In both sets, i.e., *oma'me*-set and *nimame*-set, all the cases are divided into two groups, unmarked phrasing and marked phrasing. The markedness and unmarkedness are determined by the frequency of occurrences. In each table, there are four rows of phrase groups which differ in the modifier they take. In a group, each phrase is specified with its ending postposition. The + and - signs specify whether items in a phrase are accented (+) or unaccented (-). The reason why there are two series of + and - specifications in the unmarked phrasing case in the *oma'me*-set is that one on the left specifies a surface accentuation of a phrase and one on the right in a parenthesis specifies underlying (original) accentuation of the phrase, i.e., the accentuation prior to an application of a [+Feature] of a postposition. The *nimame*-set does not have two types of accentual specifications because surface and underlying accentual specifications are the same in a phrase in the set. A slash between symbols indicates the presence of an accentual boundary. If a phrase is realized as a single phrase without an accentual boundary, such a phrase is marked by [ ]. If there are no symbols inside [ ], it shows that a phrase is realized without a boundary and with the same accentuation as its unmarked phrasing. If a subscript is attached to the bracket; it identifies the subject who uttered the instance. The symbol Ø indicates the absence of an instance. Finally, the numeral in each case indicates the schematic F0 contour of the phrase presented in the last section of the paper so that the reader can have visual understanding of the phrase in question.

Table 3
The results of accentual phrasing of the phrases whose head is the accented noun, *oma'me* 'beans'.

OMA'ME - Set

	Unmarked Phrasing				Marked Phrasing	
ao'i						
A11	+/ + -	(*ma'de*)	(+ + +)	(2)	[+ - -] h/s	(9)
A 12	+/ - +	(*gu'rai*)	(+ + +)	(3)	[ ] h	(10)
A13	+/ - -	(*jyuu*)	(+ + -)	(4)	Ø	
A14	+/ + -	(*ni*)	(+ + -)	(2)	[+ - -] s	(9)
omoi						
A21	-/ + -	(*ma'de*)	(- + +)	(5)	Ø	
A22	-/ - +	(*gu'rai*)	(- + +)	(5)	Ø	
A23	-/ - -	(*jyuu*)	(- + -)	(7)	Ø	
A24	-/ + -	(*ni*)	(- + -)	(5)	[ ] h/s	(9)
a'ni -no						
A31	+/ + -	(*ma'de*)	(+ + +)	(2)	[+ - -] h	(9)
A32	+/ - +	(*gu'rai*)	(+ + +)	(3)	[+ - -] h	(9)
A33	+/ - -	(*jyuu*)	(+ + -)	(4)	Ø	
A34	+/ + -	(*ni*)	(+ + -)	(2)	[+ - -] h	(9)
ane -no						
A41	-/ + -	(*ma'de*)	(- + +)	(5)	[ ] h	(6)
A42	-/ - +	(*gu'rai*)	(- + +)	(5)	[ ] h/s	(6)
A43	-/ - -	(*jyuu*)	(- + -)	(7)	[ ] s	(8)
A44	-/ + -	(*ni*)	(- + -)	(8)	[ ] h/s	(6)

Table 4
The results of accentual phrasing of the phrases whose head is the unaccented noun, nimame 'cooked beans'.

Nimame - Set

	Unmarked Phrasing			Marked Phrasing	
ao'i					
B11	+/ - +	(*ma'de*)	(3)	[ ] h/s	(10)
B 12	+/ - +	(*gu'rai*)	(3)	[ ] s/t	(10)
B13	+/ - -	(*jyuu*)	(4)	[ ] h (9);	+/-/- k
B14	+/ - -	(*ni*)	(4)	[ ] s/h	(9)
omoi					
B21	[- - +]	(*ma'de*)	(6)	Ø	
B22	[- - +]	(*gu'rai*)	(6)	Ø	
B23	[- - -]	(*jyuu*)	(8)	-/-/-k	
B24	[- - -]	(*ni*)	(8)	Ø	
a'ni -no					
B31	+/ - +	(*ma'de*)	(3)	Ø	
B32	+/ - +	(*gu'rai*)	(3)	[+ - -] h	(9)
B33	+/ - -	(*jyuu*)	(4)	Ø	
B34	+/ - -	(*ni*)	(4)	[ ] h	(9)
ane -no					
B41	[- - +]	(*ma'de*)	(6)	Ø	
B42	[- - +]	(*gu'rai*)	(6)	-/ - +k	(5)
B43	[- - -]	(*jyuu*)	(7)	-/ - - k	(7)
B44	[- - -]	(*ni*)	(8)	Ø	

For example, a part of the first, *ao'i*-group in the *oma'me*-set which is reproduced below can be read as follows:

OMA'ME - Set

	Unmarked Phrasing			Marked Phrasing	
ao'i					
A11	+/+-	(*ma'de*) (+++)	(2)	[+--] h/s	(9)
A13	+/--	(*jyuu*) (++-)	(4)	Ø	

The case, A11, *ao'i* + *oma'me* + *ma'de* (+++) was realized, in the case of unmarked phrasing, as +/+- , i.e., *ao'i* L% *oma'me-made* with the insertion of an accentual boundary. The schematic F0 contour of the phrase is (2) (which is listed in Figure 2). The subjects H and S, however, uttered the same phrase as [+--], i.e., *ao'i-omame-made* with no insertion of L% and with just one culminative accent on the left-most item, *ao'i* . The utterance is regarded as marked phrasing, and its schematic F0 contour is shown in Figure 9. Another case, A13, *ao'i* + *oma'me* + *jyuu* whose underlying accentuation is (++-) was realized as +/--; *ao'i* L% *omame-jyuu* , i.e., an intermediate phrase consisting of two accentual phrases. The schematic F0 contour of the phrase is presented in Figure 4. All five subjects showed the same phrasing pattern because its marked case has Ø, a null-sign.

Now, let us look at unmarked phrasing in the *oma'me*-set.[1] The phrases in the set have a consistent pattern of phrasing, i.e., the insertion of an interphrasal boundary between the modifier and the noun. The accentuation of the phrases seems to have no impact on the phrasing because there are the differences of all the possible combinations in accentuations. That is, if the accentuation of the postpositions are excluded from consideration, there are following accentual variations across the interphrasal boundary:

+/+ (*ao'i* L% *oma'me-* ; *a'ni -no* L% *oma'me-*)
+/- (*ao'i* L% *omame-* ; *a'ni -no* L% *omame-*)
-/+ (*omoi* L% *oma'me-* ; *ane -no* L% *oma'me-*)
-/- (*omoi* L% *omame-* ; *ane -no* L% *omame-*)

The above facts seem to suggest that a syntactic configuration rather than an accentual configuration determines accentual phrasing. That is, as unmarked phrasing, a phrase of "modifier + noun + postposition" is uttered as an intermediate phrase consisting of two accentual phrases with L% inserted after the modifier. So, to account for the accentual phrasing, we can posit a very simple working hypothesis; i.e., if a phrase has a syntactic configuration of modifier + noun + postposition, insert an interphrasal accentual boundary after a modifier.

Next, let us look at unmarked phrasing in the *nimame*-set in Table 4 , and test whether the above hypothesis can account for all the phrasings. In the *nimame*-set, the working hypothesis based on syntactic configuration is obviously denied because in *omoi* - and *ane -no* groups, there is no instance which has an interphrasal L%. All these phrases were realized without an accentual phrase boundary. This discounts the syntax-based hypothesis. The question is, then, how to account for the fact that it is only the phrases in the unaccented modifier (*omoi* and *ane-no*) groups in the *nimame*-set that do not have an interphrasal L%. It looks as if the accentual configurations of the phrases, too, fail to condition accentual phrasing because in the *oma'me*-set, there are the cases where L% is inserted between an unaccented modifier (-) and an unaccented noun (-), i.e., "-/- " (cases: A22, A23, A42, and A43). On the other hand, in the *nimame*-set, there is no insertion of L% in the phrases which have exactly the same accentual configuration, i.e., [- -] (cases: all the phrases in *omoi-* and *ane-no* groups). So, denying the previous syntax-based working hypothesis, it seems that accentual phrasing is arbitrary; i.e., the insertion of the interphrasal L% cannot be predicted either by a syntactic configuration or by an accentual configuration.

Importantly, however, it becomes possible to obtain a generalization on accentual phrasing once the underlying (original) accentual configuration rather than the surface pattern is taken into account. That is, in all the *underlying* accentual forms (i.e., the accentuations of the phrases prior

to the applications of the postpositional features) in the *oma'me*-set, there is at least one + either in the modifier slot or in the noun slot. It is, then, always the case that an interphrasal L% is inserted after a noun. Now, in the *nimame* -set, all the phrases in the *ao'i-* and *a'ni-no* groups have + specification in the modifier slot, and they all have an interphrasal L%. In the same *nimame*-set, however, all the phrases in the *omoi-* and *ane-no* groups which do not show any interphrasal L% have no + specification either in the modifier slot or in the noun slot. Thus, from these facts, we can deduce the following generalization: in the case of unmarked phrasing, a phrase of "modifier + noun + postposition" has an interphrasal accentual boundary after the modifier if either the modifier or the noun is underlyingly (originally) accented. This generalization accounts for the unmarked phrasing exhibited in all the data.[2]

5. PSYCOLINGUISTIC IMPLICATION

One psycholinguistic implication which comes to mind based on the results on the accentual phrasing is that there must be some sort of look-ahead mechanism in accentuation and phrasing. More precisely, there must be a look-ahead-one-item mechanism in accentuation and phrasing. Such a mechanism can be represented by a two-item-sized window cursor which moves from left to right one item at a time.[3] It is only in a (current) window cursor, that any accent-conflict between two items is resolved. Also, in the (current) window cursor, a phrasing decision is made; i.e., an accentual phrase boundary will be inserted if, in the cursor, there are two words and at least one of them is underlyingly accented (+).

What are the reasons for postulating a look-ahead-one-item mechanism for accentuation and phrasing? First, if there were no look-ahead mechanism at all, how would it be possible to account for the resolution of an accent-conflict triggered, for example, by the feature, [+Deaccenting]; e.g., (A13) *ao'i + oma'me + jyuu* → *ao'i-omame -jyuu*? To deaccent correctly *oma'me* as *omame* in the phrase, the speaker has to see the feature [+Deaccenting] before the speaker reaches the second mora of the noun, or more reasonably before the speaker starts to utter the noun. Thus, there must be some sort of look-ahead mechanism in accentuation. If, however, the speaker were able to look ahead at the accentual configurations of items up to the end of the phrase, in other words, if there were a *phrase-sized* window cursor, it would not be possible to account for the phrasing difference between, for example, (A23) *omoi -omame -jyuu* ; (- + -), -/ - - and (B23) *omoi -nimame -jyuu* ; (- - -), [- - -]. If the speaker were able to see the feature [+Deaccenting] prior to uttering the phrases, both phrases would have the same phrasing, i.e., [- - -]. That is, A23 should not have the interphrasal L% because the speaker would be able to see the feature [+Deaccenting] of the postposition prior to uttering the initial word and, thus, would treat the accentuation of the whole phrase as [- - -]. If this were the case, (A23) *omoi -omame -jyuu* [- - -] and (B23) *omoi -nimame -jyuu* [- - -] should have had the same phrasing, i.e., [- - -], according to the earlier generalization which inhibits the insertion of an interphrasal L% between two unaccented (-) words. However, the fact that A23 was realized as -/ - - whereas B23 was realized as [- - -] denies the existence of the phrase-sized window cursor; i.e., the speaker cannot look ahead to all the accentual configurations of a phrase before starting to utter it.

A look-ahead-one-item mechanism or an implementation of a two-item-sized window cursor will explain things nicely. Because there is a two-item-sized window-cursor, an interphrasal L% is inserted after the modifier in A23 but not in B23 due to the generalization that a phrase will have L% between two words if at least one of them is (underlyingly) accented:

A23

omoi (-)*oma'me* (+) *jyuu* [+Deac]

||

omoi L% *oma'me*

B23

omoi (-)*nimame* (-) *jyuu* [+Deac]

||

omoi *nimame*

The next movement of the cursor enables the speaker to see the feature [+Deaccenting] and to deaccent the noun, *oma'me* , in A23:

omoi / *oma'me jyuu* [+Deac][4]

||

omame -jyuu

omoi *nimame -jyuu* [+Deac]

||

nimame -jyuu

The results, *omoi* L% *omame jyuu* and *omoi nimame jyuu* are exactly what we want as the unmarked phrasing for the phrases. The same argument applies to the phrasing difference exhibited between A42 and B42; and this argument is compatible with all the accentual phrasings and the realization of postpositional features shown in Table 3 and 4. We would thus like to claim that, at least in well-articulated speech involving no narrow focusing, a speaker possesses a look-ahead-one-item mechanism in accentual phrasing and in realizing the accentual feature of a postposition.

6. CONCLUSION

Based on the acoustic evidence, we have shown that (i) the conditioning factor for accentual (minor) phrasing is the underlyling accentual configuration of a given intermediate (major) phrase; (ii) an accentual phrase boundary is inserted between two words if at least one of them is underlyingly accented; and that (iii) there is a look-ahead-one-item mechanism in accentual phrasing and in realizing the accentual features of postpositions. We believe that these claims hold not only in the cases where the intermediate phrase consists of just three items, "modifier + noun + postposition", but also in the case of intermediate phrases consisting of more than a few items.

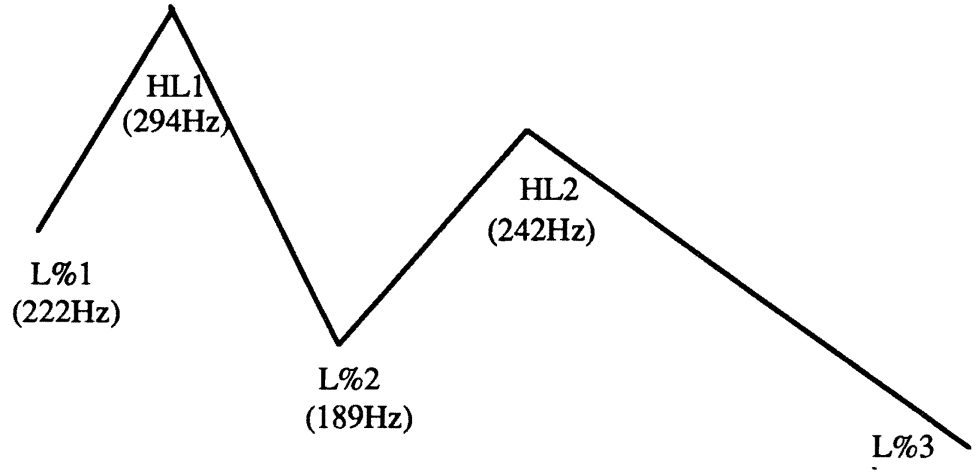

Figure 2

A schematic pitch contour of (2), +/ + - : L% HL L% HL L%. (F0 values are means of 15 tokens.)

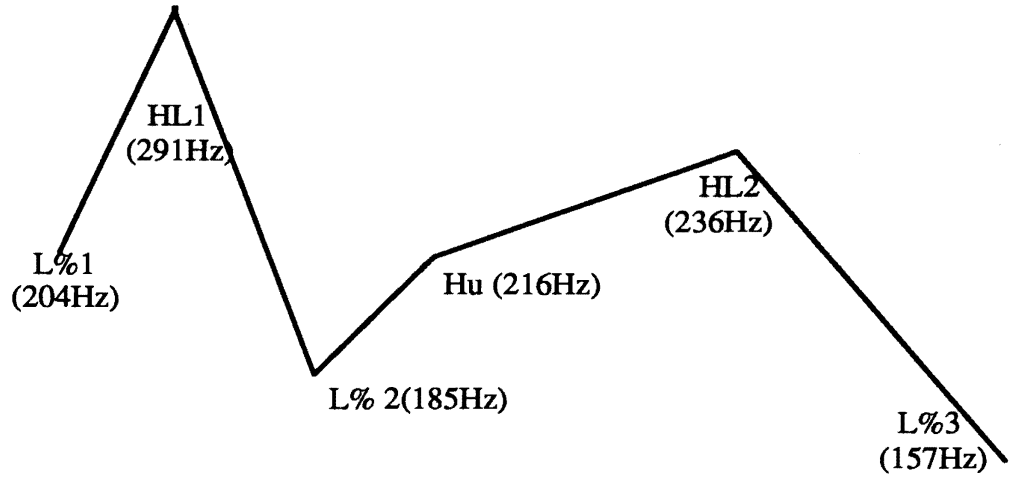

Figure 3

A schematic pitch contour of (3), +/ - + : L% HL L% H HL L%. (F0 values are means of 22 tokens.)

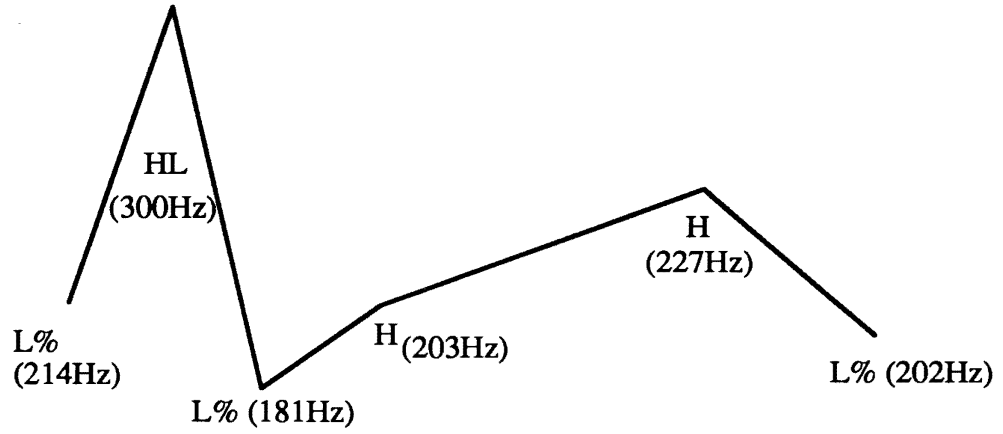

Figure 4

A schematic pitch contour of (4), +/ - - : L% HL L% H H L%. (F0 values are means of 14 tokens.)

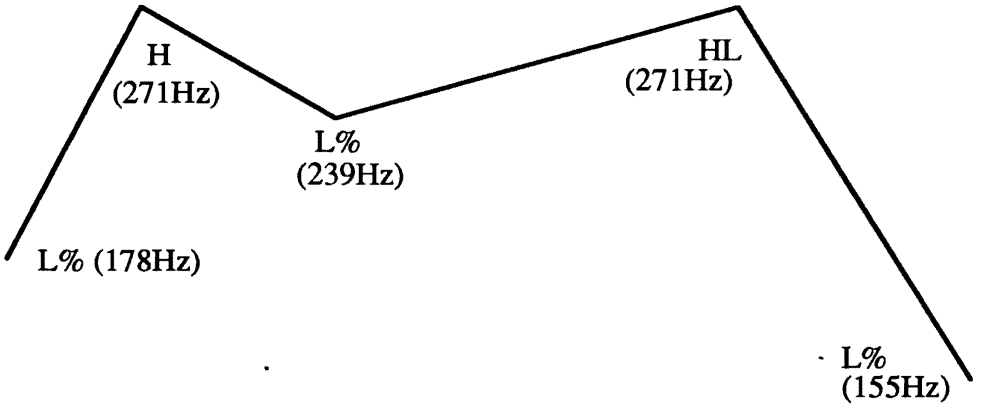

Figure 5

A schematic pitch contour of (5), -/ + - ; -/ - + : L% H L% HL L%. (F0 values are means of 23 tokens.)

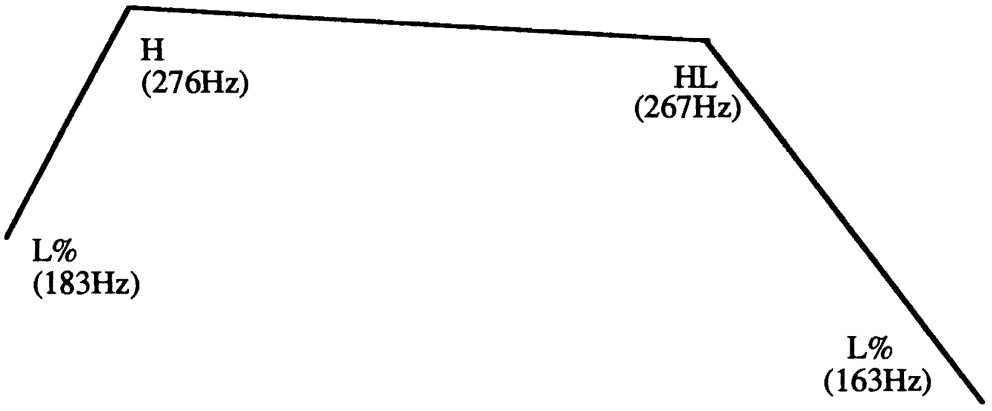

Figure 6
A schematic pitch contour of (6), [- - +] : L% H HL L%. (F0 values are means of 19 tokens.)

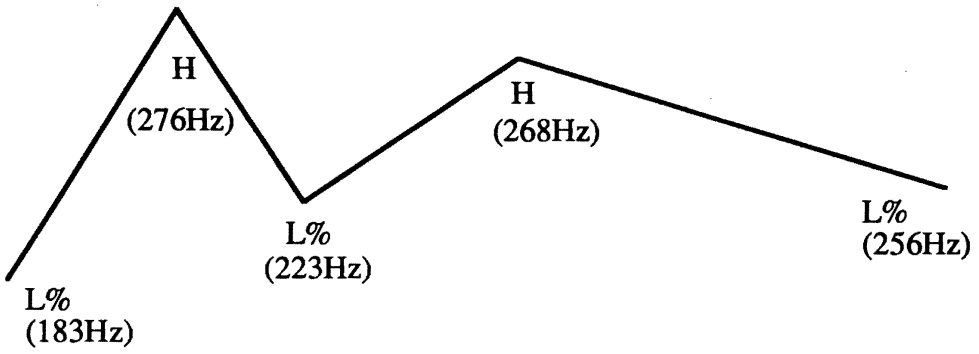

Figure 7
A schematic pitch contour of (7), -/ - - : L% H L% H L%. (F0 values are means of 3 tokens.)

Figure 8
A schematic pitch contour of (8), [- - -] : L% H H L%. (F0 values are means of 12 tokens.)

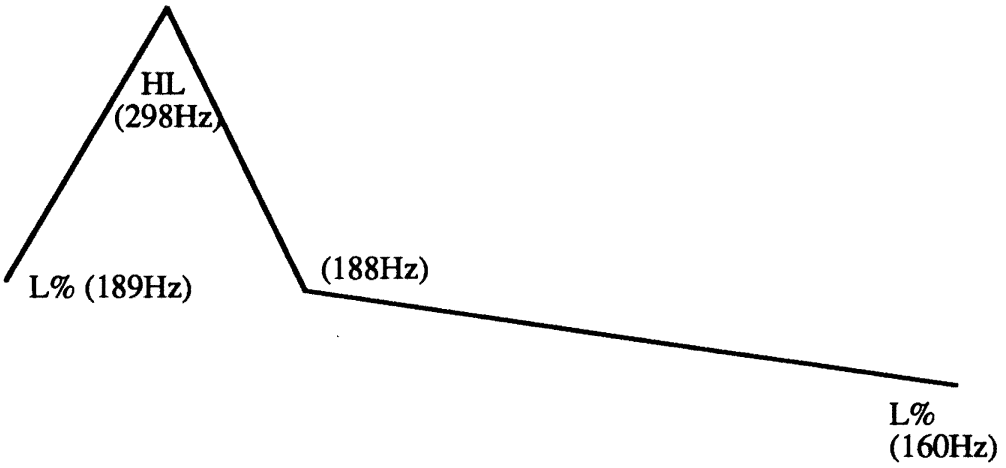

Figure 9

A schematic pitch contour of (9, marked phrasing), [+ - -] : L% HL L%. (F0 values are means of 10 tokens.)

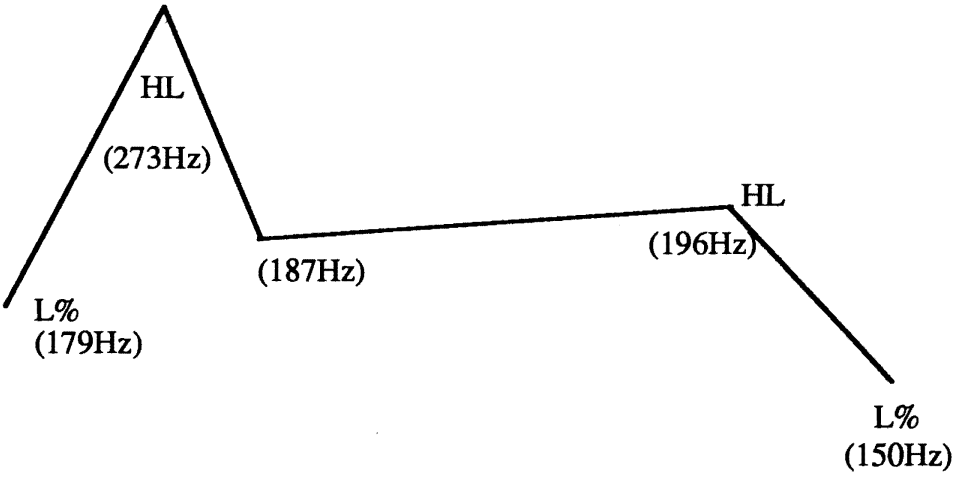

Figure 10

A schematic pitch contour of (10, marked phrasing), [+ - +]: L% HL HL L%. (F0 values are means of 4 tokens.)

NOTES

1. In this paper, we are not reporting on marked phrasing. However, roughly speaking, there are two types of marked phrasing; one caused by "culminative accentuation" and the other caused by "enunciative accentuation". Two of the subjects, S and, especially, H, constantly show the first type of marked phrasing, creating a single phrase with only one accent, whereas the subject K shows, once in a while, the second, opposite type of phrasing, inserting L% at every possible location. Typical examples of the marked phrasing caused by culminative accentuation are found in the following cases: A11, A14, A31, A32, and A34. The unmarked phrasing in these cases has either +/ + - or +/ - +, whereas the marked phrasing shows only [+ - -] which is characterized by (i) having just one culminative accent in the leftmost item and by (ii) having no interphrasal L%, realizing the whole phrase as a single accentual phrase. We performed an additional experiment

(on narrow focusing) and confirmed that this type of marked phrasing was caused by a narrow focus placed on the left-most item which deaccents any accents to its right (cf. Miyamoto 1989).

2. The maximal generalization we can obtain from the experiment may be that an accentual phrase boundary is inserted between phonological words if at least one of the phonological words is underlyingly accented, where phonological word is defined as a word coupled with or without a postposition. This generalization should be able to account for the accentual phrasing not merely of "modifier + noun + postposition" but of longer strings of words in any part of speech classifications.

3. "Item" is used as a cover term for word and postposition.

4. Because the second item in the cursor is not a word but a postposition, an accentual phrase boundary is not inserted between these two items, conforming to our generalization that an accentual phrase boundary is inserted between two *words* if one of them is underlyingly accented.

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CONJUNCTIONS AND KNOWLEDGE ACQUISITION

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1. INTRODUCTION

Written texts hold a wealth of information about our knowledge of the world. Writers use language to encode this knowledge to communicate with others. Readers gain knowledge by decoding the message contained in these written texts. Text linguistics (discourse analysis), psycholinguistics, and artificial intelligence (natural language processing) are specifically concerned with how these two processes are accomplished. Traditionally, these fields have operated quite independently of each other. However, driven by the recent demand for practical results in research and an increasing interest in computational models in linguistic theory, experts in these fields have started to work together. This change has resulted from the realization that many of the issues that were addressed separately are, in fact, common to all three disciplines. This investigation brings together previous work in several areas of each of these disciplines by focussing on two inter-related issues: the role of conjunctions in discourse and automatic acquisition of knowledge from text.

2. CONJUNCTIONS IN DISCOURSE

Discourse is a unit of language in use (Halliday and Hasan 1976:1) and so, has a purpose and a focal topic. It is realized as a sequence of one or more sentences. The message communicated by a discourse is coherent in the sense that its component parts are understood to be connected. It is this appeal to "use", "purpose" and "connectedness" that distinguishes a discourse as a linguistic unit and at the same time makes its investigation so difficult. This is because the overt, or surface form of a discourse can be so varied that the most basic units familiar to linguists (words, phrases, clauses and sentences) do not seem to provide building blocks that explain discourse structure. Rather it is necessary to appeal to constructs like "topic", "purpose" and "intention", all of which are abstract features, more connected with the question of mental representations than with the words on a printed page.

Halliday & Hasan describe discourse (or text) as follows:

> "A text is best regarded as a SEMANTIC unit: a unit not of form but of meaning. ... A text does not CONSIST of sentences; it is REALIZED by, or encoded in, sentences." (Halliday & Hasan 1976: 2)

Although text or discourse is intuitively easy to understand, a clear definition is very difficult. A sequence of unrelated statements or questions such as the following is not considered a discourse.

> The weather has improved today. Regarding the matter of fees, it is important that every member ensure their account is up-to-date. It does so deliberately and on the basis of considerable thought. And so, trailing his coat behind, he wandered off.

It does not have the connectedness that characterizes our concept of a realistic unit of language. Cohesion and coherence are terms that have been used to describe the features of connectedness in text. Cohesion refers to the linguistic devices used to signal connections and coherence to the structure of the resulting conceptual understanding derived from the surface text.

Conjunctions and prepositions are all explicit indicators which contribute to the cohesion of a text. Textual cohesion expressed in the surface structure both rests on and is an indicator of the underlying coherence in the domain of the discourse. Thus, in the absence of predefined knowledge about the textual domain, cohesive devices provide guidance in building or learning relationships between objects, events, and situations.

This functional role of connectors, a term used here to collectively refer to conjunctions and prepositions, is suggested in the work cited above. Morrow (1986) draws together other similar work to support his position that grammatical morphemes convey not only grammatical distinctions but content distinctions as well. Grammatical morphemes of the function word variety are characterized as guiding the process of discourse comprehension in organizing textual content. Rudolf (1988) presents a similar view of connective expressions as "instructions for cognitive operations" (Rudolf 1988:109). The content of these instructions aids the reader to perceive both information about the factual content of a text, as well as the writer's view of the relative important of events and situations. Halliday and Hasan (1976:227) had earlier described connective expressions as "... a specification of the way in which what is to follow is systematically connected to what has gone before." The principle of relevance is assumed to underlie the intentions of the speaker or writer of a discourse. Although we can construct examples of structurally anomalous or incorrect sentence sequences, we do not expect to find this kind of sentence intentionally placed in a discourse, particularly not in the type of written documents of interest in this study (manuals, regulations, etc.).

We can take a new perspective towards the role of conjunction in discourse by leaving aside the question of how to identify incorrect connections. Instead we begin with the assumption that the connections expressed by a text are correct and proceed to examine how many of the connections can be extracted by analysis of the explicitly marked conjunctions. In essence this approach asks the question, to what extent can we derive a representation of the organization of propositions from written text. This approach is particularly relevant to illuminating the relationship between text meaning and that elusive notion "world knowledge".

That is, function words traditionally treated as "empty" words, without significant meaning in themselves, do contribute to text meaning by providing some explicit connections among the meanings of the "content" words of an utterance or discourse. The same can be said of syntactic phrase structure which reflects the compositional nature of phrases and clauses which are intuitively recognizable units of "meaning". Clauses are connected by syntactic form or explicit connectives or both.

Function words, thus, do more than indicate syntactic structure, they also make a significant contribution to communication of meaning. The categorization of conjunctions according to an ordering relation proposed here is an explicit expression of meaning of these words. Although the different types of ordering (temporal, causal, etc.), or models, that conjunctions may suggest is another important aspect of their meaning, the present analysis does not address this issue. This is because, the conjunctions do not specify the type of relation independently. Rather, there is an interaction between these structural words and the content of the text.

This view has been suggested by other workers in the area of computational linguistics. Grosz and Sidner (1986) suggest that the organization of a discourse is based on interaction between form and content. The functions which connect elements in the intentional structure differ according to the topic of the discourse, but are parallel in form. The structural parallelism

can be captured through a general ordering relation which is independent of the particular domain. In addition, this intentional structure can be inferred from attentional structure, which is in turn built from linguistic structure. That is, features of the linguistic structure or form are reflected in the structure of the text's interpretation.

3. KNOWLEDGE ACQUISITION

This model of conjunctions as imposing ordering relations between objects or concepts in a text representation has been applied to the problem of knowledge acquisition for expert systems. Ordering among elements is an important feature in all schemes for knowledge representation. Whether the representation is a set of production rules, a network of objects and values, or a combination, some form of ordering is imposed to relate the individual components. The general ordering relations in the organization of knowledge representation have been described by Gaines (1987) as linking lower levels with "higher levels" of organization in terms of alternative and abstract models and by Breuker & Wielinga (1987) as dependencies between objects captured in a model (or view of) the object organization. The models suggested in both cases range from causal, conditional, and spatial to empirical models based on experiences, perhaps incorporating temporal ordering. Thus, the ordering relations entailed by conjunctions are an essential part of the information required in a knowledge base.

The process of knowledge acquisition involves the integration of information from many sources. Written texts are used extensively by knowledge engineers, but only limited attempts have been made to incorporate automatic analysis of texts into knowledge acquisition systems. Therefore, this project was undertaken to apply the proposed analysis of conjunctions to automatically generate a knowledge base.

In the prototype processing system developed, syntactic structure inserted in the text serves to segment the original sequence of linguistic units into concepts or objects in the representation. The linear order of syntactic units in the text imposes a basic, default organization among these components. Conjunctions are used to identify where links should be inserted between objects. In this way, conjunctions function in cooperation with the patterns of syntactic structure, to organize the representation.

4. DOCUMENT ANALYSIS

In this section, a method for interpreting and representing conjunctions in a discourse representation is presented in relation to the process of knowledge acquisition. A discourse representation is seen as a dynamic structure which is built through comprehension processes following Grosz and Sidner (1986). It is assumed that individual clauses correspond to distinct units in the discourse representation, an idea common to many researchers in the area of discourse analysis including Kintsch (1988) and van Dijk (1980). Conjunctions are seen as signaling relationships between the units of representation, and thus, their interpretation is crucial to discourse comprehension.

Bylaw No. 87-248 of the City of Victoria, British Columbia (1987) is the sample document analysed. This Bylaw sets out conditions which must be met by the operators and users of parking lots in the City of Victoria. These conditions and the relationships between them must be encoded in the discourse representation. Examination of the bylaw suggests that the text can be segmented into sentence, clause and phrase size units corresponding to conditions that must be represented. In the discourse representation, these units will be called objects. The relations among these conditions may be causal, contingent, and/or temporal and these are frequently marked in the text by explicit connectives and/or layout distinctions. Each of the relationships will also have to be included in the discourse representation as connections between

objects.

The knowledge base for an expert system based, in whole or in part, on this document will also include this same information. Using the terminology of the ACQUIRE system, the conditions will be objects in the knowledge base. The connections between them are encoded in the support links of each object. Thus, the final discourse representation can be used to generate a knowledge base. And indeed, the data structures of the knowledge base have been used as a model for representing the discourse structure.

All of the relationships between objects indicate an ordering among the objects that must be captured and encoded. No attempt has been made to encode the type of relationship; only the direction of the connection is addressed, for this is the function which is common to all of the connectives considered here. The ordering among objects provides the structural form of the discourse interpretation. In a knowledge base, this ordering among objects represents the order in which they must be considered when the knowledge base is used by inference procedures. The proposed analysis of conjunctions is applied to automatically derive these links between objects.

In the following sections, the analysis of conjunctions will be presented first. Then, an overview of the processing method implemented using this analysis is provided. The last sections provide examples from the sample Bylaw to illustrate each of the stages of processing.

4.1 Analysis of Conjunctions

It is proposed that conjunctions can be split into three groups, based on the ordering they indicate between subordinate and main clause. Figure 1 lists all the conjunctions and prepositions used in the analysis of the Bylaw and the ordering relation they signal.

Pre-Ordered	Post-Ordered	Parallel-Ordered
after	before	
where	until	
unless	upon	
except	notwithstanding	
if		and
as		or
without		

Figure 1: Function Words Classified by Direction of Contingency

In Figure 1, the headings "Pre-Ordered", "Post-ordered" and "Parallel-Ordered" indicate the ordering between subordinate and main clause that is entailed by each conjunction.

Those conjunctions listed under "Pre-Ordered" are those which specify that the content of the subordinate clause precedes, or must be considered before, that of the main clause. For example, in the following sentence, taken from the sample Bylaw, *where* marks the subordinate clause.

Subsection 10. (2)

> "(2) [Where any parking space on a licensed parking lot is equipped with a parking meter], [no person shall park a vehicle within such parking space] [without having deposited the appropriate fee for parking in the manner and at the rate prescribed or measured by the meter]."

The condition expressed in this clause must be evaluated to determine whether or not the main

clause need be considered. Therefore, this conjunction is placed in the "pre-ordered" category. In the same way, *without* indicates that the subordinate clause expresses a pre-condition for its main clause.

Each of the conjunctions in this category will generate the same structural relation between objects in the discourse representation. Regardless of the basis for the ordering (i.e. time, cause, location) of objects which correspond to each clause, the direction of the links between them will be the same. The subordinate clause will precede the object representing the main clause. Graphically, this can be illustrated by connecting the subordinate clause object below that representing the main clause. In terms of the knowledge base, this means that the subordinate clause supports the main clause.

The particular ordering related to each lexical form, independent of its semantic category is illustrated by a number of conjunctions which belong to more than one such category. The conjunction *where* can indicate either a locational relationship or a conditional relationship depending on the content of its clause. When a conditional relationship is indicated, *where* takes on the meaning *in cases where* ... (Quirk et al. 1972:745). However, whichever meaning is appropriate, the ordering relation between the clauses will be the same. The *where* clause expresses a condition which must be met before the main clause should be considered. In this example, the relationship is clearly conditional. An example that shows the same ordering based on a locational relationship might be:

"A protective shield must be installed where the intake valve is connected."

"Post-Ordered" conjunctions are those which specify that the content of the subordinate clause follows that of the main clause in the logical sequence. The following example from the sample Bylaw illustrates this relationship.

Subsection 4. (2)
"4. (1) .....

(2) [Notwithstanding the provisions of subsection (1)], [no certificate as to screening is necessary in respect of any side of a parking lot constituting a boundary with an adjoining lot] [where the elevation of such parking lot is at least 2 m lower at such boundary than the finished elevation of the adjoining parking lot]."

In this case, the main clause provides an exception to the requirements specified in the prepositional phrase. Therefore, reasoning must proceed from the main clause, *no certificate as to....*, first, and only then the content of the phrase *the provisions of subsection (1)* should be evaluated. Therefore, this preposition or conjunction is placed in the "post-ordered" category. In the discourse representation, the object for the *notwithstanding* phrase will follow the main clause object and this will be illustrated by placing the former object above the latter. *The phrase marked by notwithstanding* will thus be supported by the main clause in the knowledge base.

This example also shows the type of prepositional phrase that has been treated as equivalent to a subordinate clause in this analysis. These phrases are often equivalent in meaning with subordinate clauses through insertion of a verb (Quirk et al. 1972: 733). In this case, the phrase could be replaced by *Notwithstanding the provisions specified in subsection (1).* A number of other conjunctions also function as prepositions in this way. Some examples are *because (of)*, *before*, and *after.*

The third category, "parallel-ordered", includes the coordinating conjunctions *and* and *or.* This category of conjunction will generate a structure in which neither of the clauses is superior to the other. Rather the relationship between them exists by virtue of their relationship to the

object representing the sentence (in this case a subsection as well) as a whole. Thus, the objects in the discourse representation are not directly linked and neither object in the knowledge base supports the other.

The semantic classifications suggested by Halliday and Hasan (1976), Rudolf (1988), Martin (1983) or Quirk et al. (1972) have not been considered in this analysis. It is recognized that a complete representation of any discourse must involve the information conveyed by the kinds of distinctions that these classifications attempt to capture. However, in this work, the common role of all connectives as imposing an abstract ordering of concepts has been the major concern. The semantic distinctions such as time, cause, or location can be seen as information which would be used to include each link in the appropriate set of links or model within the representation (Gaines 1987, Johnson 1987). The connective itself does not, however, completely determine in which model(s) the link should be included. The semantic category of the connective will interact with the content of the linked clauses to make this determination.

4.2 Overview of Application

Knowledge acquisition for expert systems is the process of identifying key concepts in a particular domain and the relationships that hold between them. Specifically, in the ACQUIRE knowledge acquisition system, the key concepts are represented by objects. The relationships between objects are expressed as rules. Each object description includes link fields which specify the object's place in a support network. This network summarizes the interconnection among objects expressed in all of the rules. The first step in the knowledge acquisition process is to define the objects, including their support links, that represent the domain knowledge.

The knowledge representation used by Acquired Intelligence, Inc. is a production rule system. Production rules are IF-THEN statements, where the values of symbolic "variables" in the condition (IF) part are evaluated and values conditionally are assigned to other symbolic "variables" in the action (THEN) part. The symbolic "variables" are called objects in this system. Each object has a set of possible values and represents an entity, action or state of affairs in the knowledge domain. The rules represent decisions made in reasoning about the domain. Collectively the rules in a knowledge base define a decision network. This project focussed on identifying segments of a text which will likely embody "concepts" that must be represented as symbolic variables in the knowledge base, and where possible, determine the form of rules involving these variables.

Some concepts, or objects as they are called in the terminology of ACQUIRE, can be identified by structural features of a document and will be taken to represent "high-level" objects in the support network. The smallest units of text considered are clauses and a restricted number of prepositional phrases. The objective is to proceed top-down in creating a support network amongst objects whose meaning is reflected in segments of the text. The support network summarizes all support relationships amongst objects. The rules necessary to complete the knowledge base specify the relationships between the actual values of the objects. Thus, support links between several objects may lead to several different rules, depending on domain specific information. However, the support network constitutes a skeleton knowledge base in which basic objects and their relationships are already specified, suitable for further refinement by a domain expert or knowledge engineer.

At the same time, links inserted in the text provide on-line access to the text of the document for the developer and for the end-users of the system. In the first case, access to the text is a valuable aid to refining the automatically generated structure. End-users of the system will have access to the document for their own reference or as an "explanation" facility. The wording of the official document from which the expert system has been derived can provide a familiar framework to assist system users understand their interaction with the system.

The aim of the project described below has been to apply the analysis of connective relations described above in a procedure to automatically extract a set of object descriptions from an on-line document. To do so, we will identify salient text segments and use the relationships among them to build a network of objects. It is hypothesized that in the formal, regulatory documents that are the specific type of text addressed, the identified segments will correspond to concepts that must be part of the domain knowledge base. In the ACQUIRE system, by mapping the text segments, or concepts, to objects and the relationships between them to support links, an **intermediate text representation** can be created. This representation will be a first approximation of the knowledge base.

This process should not be viewed as "transforming" a text into a knowledge base, but rather as creating a structured text representation which could be implemented in a hypertext system (Conklin 1987). This independent representation may then be linked to a separate and distinct knowledge representation or knowledge base. This is shown schematically in Figure 2.

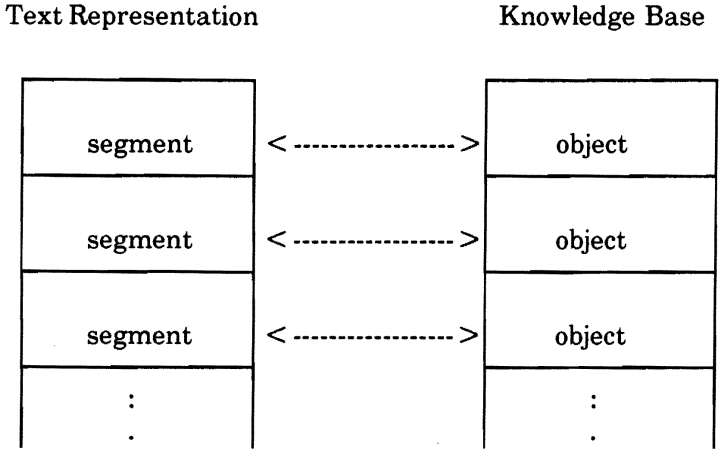

Figure 2:
Relation between Intermediate Text Representation and Knowledge Base.

Both of these structures will initially have essentially the "same" structure. However, the knowledge base created in this way will clearly be neither complete nor entirely accurate at this stage. Other information that would be necessary in a complete expert system knowledge base would be: how strictly conditions are enforced, who is responsible for enforcement, and what paperwork is required. This information must be elicited from the people who actually handle bylaw enforcement, that is, the domain experts. The intermediate knowledge base will undergo considerable revision by developers and/or domain experts as changes and additions are made to this intermediate structure. Having a separate text representation leaves open the possibility that links between objects and text segments can be maintained when either the document or knowledge base is edited (although this topic is not discussed here).

In the following discussion, the characteristics of the document layout are addressed first along with a discussion of how they contribute to structuring the document's content. Then, the actual language used in the bylaw is addressed. This second part of the discussion focuses on those linguistic features which are immediately useful in identifying relevant concepts or objects without recourse to a pre-existing representation of a domain lexicon or "world knowledge". For this reason, our analysis has focussed on function words like conjunctions and prepositions which are commonly used in formal documents and have a reasonably consistent meaning across many domains. The relatively frequent use of connectives in this discourse style provides a rich source

of information that can be used to establish the direction of connections between the concepts represented by the clauses or phrases.

These two types of characteristics, document layout and linguistic structure, of the sample Bylaw are discussed separately because of their different nature. Document layout characteristics are visual cues to human comprehension imposed on the linguistic content of the document. Many types of text, like most narratives, lack the wealth of document layout features that are exhibited in our sample document. However, this research is specifically concerned with official, regulatory document which are characteristically highly structured. Therefore, we have taken advantage of the information provided by these visual features.

In this processing model, the document format characteristics are used to provide the basis for linguistic interpretation. That is, the segmentation indicated by the document layout is done first and then serves to guide the interpretation of the linguistic structure.

4.3 Document Layout

Examples from the sample Bylaw are used in the following discussion of the structural description derivable from typographic layout of a document. The structure derived from the document layout features will be called the **document structure representation**, or more simply, the **document structure.** This representation is one "view" of the input text which captures the logical segmentation of the document. The additional information derived from the linguistic features (Section 4.4) will be added to this **document structure** to create what will be called the **intermediate text representation.**

The following is an excerpt from the bylaw.

1. This bylaw may be cited as the "PARKING LOT BYLAW".

2. In this bylaw

   "vehicle" has the meaning assigned to it in the Motor Vehicle Act;

   "parking lot" means a place, on one parcel of land, which is used or set aside for use for the parking of one or more vehicles in consideration of the payment of money.

3. No person shall operate a parking lot unless he holds a valid and subsisting licence for it, issued under the provisions of this bylaw and of the Business Licence Bylaw.

4. (1) No licence for a parking lot shall be issued unless and until the City Engineer certifies:

   (a) That the surface area of the parking lot has been completely paved and is adequately drained;

   (b) where the parking lot is in or adjoining an area zoned by bylaw or lawfully used for residential use, that it is screened from adjoining parcels of land either by evergreen hedges or by view obscuring fences or both and that such hedges or fences are of a height of not less than 1.3 m and, for fences, not more than 2 m, along the common boundaries of such adjoining properties and of the parking lot;

(c) where the parking lot abuts on a street, that it is screened along its entire street boundary, except for necessary vehicular access points, either by an evergreen hedge or shrubs or by permanent masonry planters with plants growing in them, or by both methods, in such a manner as to provide an effective screen of the parking lot along all street boundaries and of a height of at least 1.3 m above ground level;

(d) that all lighting used to illuminate the parking lot is deflected from adjoining lots and streets; and

(e) that there is only one sign, not exceeding 2 m^2 in area, at each entrance and at each exit, and that such sign does not contain any words or signs other than to designate entrances, exits, conditions of use of the parking lot, the name of the parking lot and conditions relating to the towing away of vehicles.

(2) Notwithstanding the provisions of subsection (1), no certificate as to screening is necessary in respect of any side of a parking lot constituting a boundary with an adjoining lot where the elevation of such parking lot is at least 2 m lower at such boundary than the finished elevation of the adjoining parking lot.

(3) Where the provisions of subsection (2) apply the City Engineer may stipulate any modifications of the screening requirements as may be necessary to conform to zoning bylaws and traffic bylaws in respect to safety.

5. . . . " (Victoria 1987)

Figure 3:
Excerpt from Bylaw 87-248, City of Victoria

The typographical layout used in this document provides many visual cues which help readers in identifying the organization of its content. Drafters have used numbering or labelling, in conjunction with punctuation, indentation and spacing to indicate logical segmentation of the document. For example, labels which are Arabic numbers followed by a period, like 1.,2.,3., etc., indicate the beginning of a section of the bylaw. These sections are further marked by extra spacing, both before and after the section's text. The text of the section is aligned at the leftmost indentation point. Each of these layout features provides a visually prominent indication of the extent of the segment.

Each section in the Bylaw addresses a specific topic relevant to the operation or use of parking lots. It is possible to distinguish different functions for some of the sections. For example, section 1. simply provides the "name" of the Bylaw. Section 2. lists the definition of important terms used in the rest of the sections. The remaining sections of the Bylaw, like 3. and 4. shown above, stipulate conditions on specific aspects of parking lot operation or use. In this project, no attempt has been made to identify or make use of these functional distinctions. However, because these distinctions are conventionally used in the presentation of regulatory documents, they could be profitably utilized. For example, recognition of the name of the Bylaw would be extremely important if an attempt were to be made to incorporate all, or even a few, Bylaws in a single representation. Also, any lexical analysis would be aided by having a list of important terms and their definitions available.

Each of these sections will be represented as a node in the **document structure** representation. These nodes will be directly linked to a node representing the whole document in a hierarchical relation. The nodes in the **document structure** represent segments of the document. Since no typographical features indicate any further grouping, the document structure derived for these segments can be represented by the tree diagram shown in Figure 5.

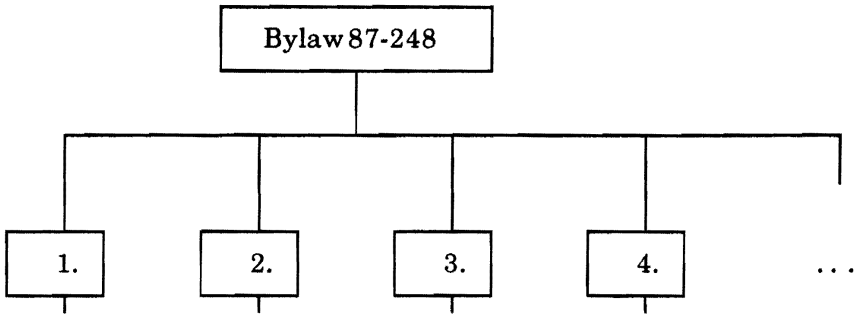

Figure 5: Structure of Bylaw Sections

In section 3.,there is no further segmentation indicated by the typographical layout. Section 4., however, is divided into a number of subsections. The beginning of each subsection is labelled by an Arabic number enclosed in parentheses. In this case, the labels are (1), (2) and (3). The change in style of labelling indicates the beginning of a new segment in the text and a new grouping of segments. The numbers themselves explicitly suggest (to the human reader who is familiar with the order relation between the symbols "1", "2", etc.) an ordered sequence among these units. Subsections labels begin again at the start of the numeric sequence and, thereby, indicate an interruption in the ordering between segments.

The hierarchical, or subset, relation of these new sections is visually emphasized by indentation. The subsection label is indented relative to the section labels. The text of the subsection is indented further to the right than the text wholly contained in a section (as in 3.). The first level structure of this section is graphically illustrated in Figure 6.

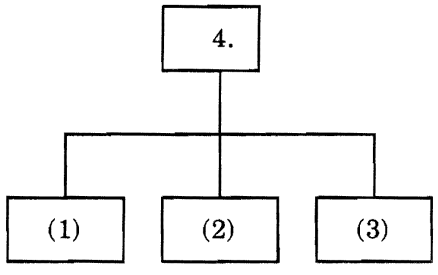

Figure 6: Structure of Bylaw Section 4

The third level of segmentation is labelled by lower case alphabetic characters enclosed in parentheses (for example (a),(b), etc.). The same indentation and spacing used to distinguish subsections from sections are used in this case to distinguish clauses (or "list" items) from

subsections. In addition, punctuation between the clauses reinforces, even more, the subordinate nature of these segments. Unlike sections and subsections which are terminated by periods, the clauses (except the last) are all terminated by semi-colons.

These observations will seem "obvious" because, as skilled readers, we have all learned the conventions used in printed publications and are not usually aware of using this source of information. However, if all section numbering, indentation and spacing were removed from the document, the result would be far less easily understood. In this project, these typographical features are used to automatically build the document structure representation which will serve as the basis for the balance of the analysis.

The initial data is in the form of an ASCII file containing a print image of the Bylaw. The clause markers discussed below are included in the text. The first program in the prototype system removes all blank lines, leading blanks and segment labels (1.,a), etc.). In their place, Standard Generalized Markup Language (SGML) style tags are inserted in place of each segment label.

Many documents created on-line are already marked with codes equivalent to the SGML tags used here. However, documents which are not on-line can be captured by the use of an Optical Character Reader. In this case, or where the document creation language does not provide sufficient marking of document segments, the suggested procedure would be a necessary step in the document analysis.

The structure of the first four sections of the sample Bylaw can be graphically represented as in Figure 7.

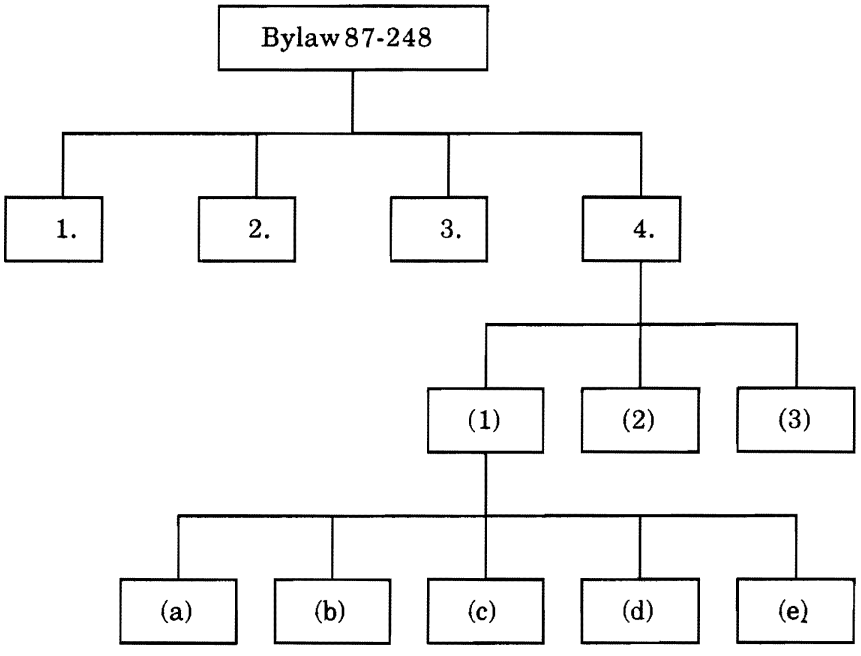

Figure 7: Bylaw Document Structure

The physical form of the document imposes this strict hierarchy which can be viewed as a tree structure. Terminal nodes, or leaves, of the tree represent document segments which are not further subdivided and are directly associated with continuous portions of the actual text. Internal nodes represent groupings of the segments. These nodes are associated with portions of text through links with the nodes they contain. The **document structure** is important for both further analysis and for the maintenance of links between the text and the knowledge base.

The strictly hierarchical structure of the document components is a reflection of the strict sequential ordering imposed by the presentation medium in the original document. This structure can be graphically represented as a tree. The graphic representation embodies a composed-of relation between a node and its subordinate nodes. For example, take the following excerpt from the Victoria Parking Bylaw.

Section 10.

"10. (1) Where parking spaces on a licensed parking lot are clearly delineated by painted lines or barriers, no person shall park a vehicle on such parking lot, except in such parking spaces, and no person shall park a vehicle in such a manner as to straddle the line between two parking spaces."

(2) Where any parking space on a licensed parking lot is equipped with a parking meter, no person shall park a vehicle within such parking space without having deposited the appropriate fee for parking in the manner and at the rate prescribed or measured by the meter."

The document structure will represent the section (10.) and its two subsections as distinct components with the two subsections contained in the section as shown in Figure 8. Section 10. is composed of subsections (1) and (2). Equally, both subsection (1) and (2) are in an element-of relation with Section 10.

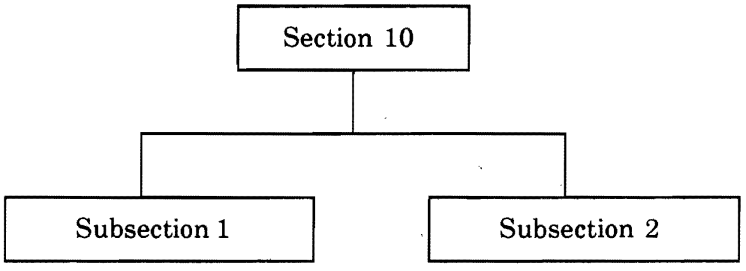

Figure 8: Document Structure - Section 10.

In order to use the **document structure** to create a knowledge base, the physically defined structure must be interpreted in terms of objects and support. The interpretation used here equates each document component, or node in the tree, with an object in the knowledge base. The composed-of and element-of relationships, represented by branches in the tree, are then equivalent to the support links. The physically defined composed-of relation will be interpreted as indicating that the dominating object is supported by the subordinate object(s). So, in Figure 8, the object, "Section 10." is supported by both "subsection 1" and "subsection 2" objects.

The relationship between a document component and those subordinate to it often, though not necessarily, reflects logical relations which should be included in the text representation. Therefore, we can directly map the hierarchical relations of the document structure into relations between corresponding nodes in the text representation. That is, the composed-of relation in the document representation will become the support-from relation in the text representation. Similarly, the element-of relation will become the support to relation. The links in the document representation thus provide information about the probable structure of the **text representation**. This will not always yield an accurate description of the logical connections between document components; however, in a significant number of cases it does.

Each document component described above has a distinct format, sequential labelling, indentation, and spacing. These format distinctions are used by document writers to help readers organize their understanding of the document's content. Therefore, where the format indicates a division of the document into subcomponents, we will assume that a corresponding component in the text representation is justified.

In this document, each section component comprises exactly one sentence, unless it contains subsections. Subsections all contain exactly one sentence. Whatever the status of the "sentence" as a linguistic unit, in written discourse the boundaries of sentences are explicitly and unambiguously marked by punctuation. Grouping ideas into complex sentences demonstrates the author's intention that those ideas are closely connected. We assume that the author of public documents intend to express correct and accurate information. Therefore, we will take this characteristic of the sections and subsections as additional justification for identifying each as a node in the text representation network.

Initially, this hierarchical structure will constitute the **intermediate text representation**. Each document component will map directly to a node in the text network and the document structure links will correspond to the support links between them. In this case, the nodes representing Subsections 1 and 2 will both have a support-to link with the Section 10 node and Section 10 will have support-from link with both Subsections 1 and 2. The next section describes how the **intermediate text representation** is further refined.

4.4 Intermediate Text Representation

The default text representation that is derived from the document structure can be both extended and revised by utilizing signals that are contained in the linguistic realization of each component. Explicitly marked adverbial prepositional phrases and subordinate clauses, can be used to further divide the lowest level document components (leaves on the tree) into separate text components and establish appropriate links between them. Explicit references to document components can also be used to prevent the duplication in text nodes and correctly link potentially non-adjacent document components.

The **intermediate text representation** is a network identifying salient textual components as nodes and the relationships between these components as bi-directional links. Textual components are defined as contiguous portions of a text whose interpretations represent decision points in reasoning about the text's knowledge domain. Unlike the document structure, the text representation is not necessarily hierarchical and cannot be modeled as a tree structure. Instead, a network provides a more accurate description of this **intermediate text representation**.

The hierarchical organization of a tree means that a node may be linked to only one node higher in the tree, although it may link to several nodes below itself. This restriction is reflected in the terminology often used to describe directly linked nodes as mother and daughter, where the mother node is higher in the tree than the daughter. A mother may have several daughters but only one mother.

The **text representation** will not have this restriction on the links between objects or nodes. It has been pointed out previously that there may be many sets of links between objects, each representing a different model or view of the discourse. Thus any object can be linked to any number of other objects either higher or lower in the structure. This kind of organization is described as a network.

This representation attempts to identify segments of the text which can be easily interpreted by people as decision points in a reasoning network. The analysis does not attempt to establish the "meaning" of each segment, but only derives the ordering imposed by the logical contingency between them. Thus, the network represents only the ordering among the identified decision points, not the specific content. The developer or experts who will use this representation are active participants in the system and they will be responsible for attributing the "meaning" to each segment.

Complex sentences provide a structural mechanism for expressing the connection between related concepts. The complexity of a sentence is dependent on the stylistic choices of the writer, but the reason for the choice is not of concern here. The relevant observation is simply that complex sentences are used extensively in formal documents such as that addressed in this study. Therefore, the structural characteristics of these sentences can be exploited to derive a representation of the logical ordering of concepts related to the structural components.

For example, Section 3 of the Bylaw, shown below, is one of the document components that can be further subdivided on the basis of clause structure.

Section 3.

"3. [No person shall operate a parking lot] [unless he holds a valid and subsisting licence for it, issued under the provisions of this bylaw and of the Business Licence Bylaw]."

In this example, the square brackets indicate the major clause breaks in the sentence. The two clauses both express concepts that are crucial to the knowledge structure for this domain. *No person shall operate a parking lot* clearly includes the concept of operating a parking lot which is one of the top level concepts that the target knowledge base must include. The subordinate clause, *unless he holds a valid and subsisting licence ...*, also includes reference to an important concept, that of holding a licence. These two concepts are directly related in terms of reasoning about this domain of parking lot operation. That is, in order to establish whether *a person can operate a parking lot* it is necessary to determine if *he holds a valid licence*. This relationship is represented in a knowledge base through support links between objects. These links must indicate that the object, *he holds a valid licence*, supports the object, *a (this) person can operate a parking lot.*

It is not necessary to consider the meaning of the two clauses to establish this relationship as long as we assume that the writer is presenting the content in a truthful and accurate way. It is sufficient to recognize the clausal divisions in the sentence to identify new objects.

In the construction process, a new object will be generated for each marked clause. Thus, structural form of the text is interpreted as marking units of the text that correspond to units of the discourse representation. The direction of the link between these two objects will be determined by the particular conjunction introducing the subordinate clause.

Although no automatic syntactic analysis is attempted in this project, one can see how the syntactic structures act as discourse signals to indicate connections between clauses. Since we need to recognize phrasal boundaries, these crucial divisions have been inserted by hand. The clause boundaries that were marked, and thus used in further analysis, are as follows:

- Subordinate adverbial clauses explicitly marked by a conjunction,
- Verbal constituents conjoined by *and* and *or*,
- Preposed prepositional phrases.

The conjunctions in the text are used to establish the support links between objects. The subordinate clause in Section 3., introduced by *unless*, expresses a condition for determining the status of the proposition expressed in the main clause. That is, holding an appropriate licence is a condition for operating a parking lot. If we consider how these two clauses are used in reasoning about this domain, it is clear that *the value of the* unless *clause, he holds a valid and subsisting licence ...* , supports whatever conclusion can be made about the main clause, *no person shall operate a parking lot.* That is, it is necessary to make some conclusion about *holding a licence* before the value of *operating a parking lot* can be determined. Thus, unless. is a member of the category called "pre-ordered" as described in Section 4.1.

In this item, the syntactic realization divides the sentence into two clauses. The subordinating conjunction *unless* explicitly marks the subordinate clause functioning as an adverbial clause of condition (Quirk et al., 1972). *Unless* expresses a conditional relation in which the subordinate clause states a condition which must be considered in establishing the meaning (or consequence) of the main clause. In this case, if we are reasoning about parking lot operation (content of the main clause), then the situation represented by the subordinate clause must be considered before or, in order that, the "value" of the main clause can be determined.

In the text network, this relation can be captured by establishing a support to link from the node representing the subordinate clause to the node representing the main clause. The inverse relation is captured with a support from link from the main node to the subordinate node. This will result in the configuration shown in Figure 9. Since these links are always bi-directional, only a single line will be used to indicate the links between nodes in the diagrams. The physical placement on the page in which one object appears above another will serve to indicate the direction of links. That is, support-to links are always pointing upwards and support-from links point towards the bottom of the page.

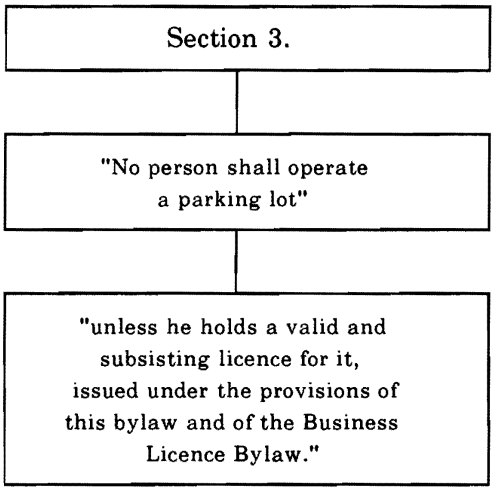

Figure 9: Structure of Section 3.

The actual interpretation of each clause that is suggested above is only implicit in this representation. The nodes themselves are simply symbolic entities. An interpretation is attributed to a node only by the system's users: developers, experts, or others. Therefore, the

clauses themselves will be used as descriptive labels for the nodes, so that they can be readily interpreted. The significance of the links themselves is represented in part through their use by the reasoning procedures. These procedures do not directly consider what kind of link is represented: only the sequence of connections is important. However, the conjunctions themselves remain as part of the descriptive labels so that this information will be available to the system developers.

Other conjunctions which have the semantic force of temporal sequence, cause, or condition impose the same kind of abstract ordering on the situations described by clauses. Two such conjunctions are *where* and *without*. Each of these conjunctions is a member of the "pre-ordered" category and indicates that the associated phrase or clause is in a supporting relation to the clause it modifies. For example, both of these conjunctions appear in the following subsection (10.(2)) of the Bylaw.

Subsection 10. (2)

> "(2) [Where any parking space on a licenced parking lot is equipped with a parking meter], [no person shall park a vehicle within such parking space] [without having deposited the appropriate fee for parking in the manner and at the rate prescribed or measured by the meter]."

The *where* clause expresses a condition which must be met before the main clause should be considered. *Without* imposes the same ordering between its clause and the main clause. Therefore, the structure shown in Figure 10 is derived from the text of subsection 10.(2).

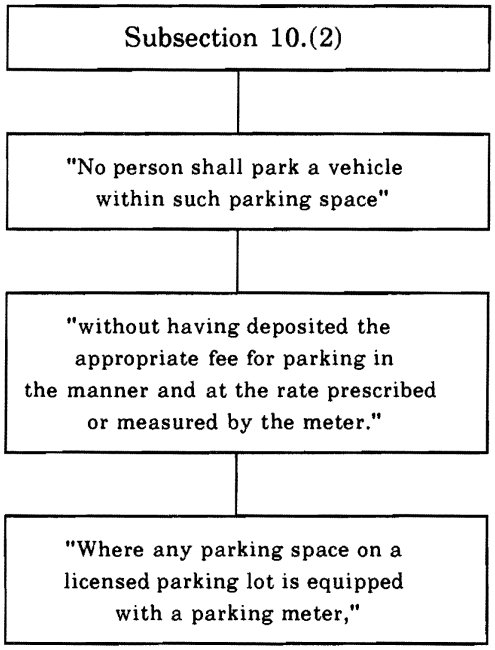

Figure 10: Structure of Subsection 10.(2)

Notwithstanding is a connective that also signals that a further division in the textual content should be made. This is an example of the type of prepositional phrase that has been treated as equivalent to subordinate clauses.

Unlike the preceding examples, the opposite ordering of clauses is indicated by *notwithstanding* since it is a member of the "post-ordered" category. The *notwithstanding* phrase or clause is supported by the main clause, rather than supporting it. Thus, it is an example of the category of conjunctions called "post-ordered". For example, subsection 4.(2).

Section 4.

"4. (1) .....

(2) [Notwithstanding the provisions of subsection (1)], [no certificate as to screening is necessary in respect of any side of a parking lot constituting a boundary with an adjoining lot] [where the elevation of such parking lot is at least 2 m lower at such boundary than the finished elevation of the adjoining parking lot]."

In this case, the main clause provides an exception to the requirements specified in the prepositional phrase. Therefore, reasoning must proceed from the *no certificate* .... clause first, and then to *the provisions of subsection (1)*. The structure generated from this section is shown in Figure 11.

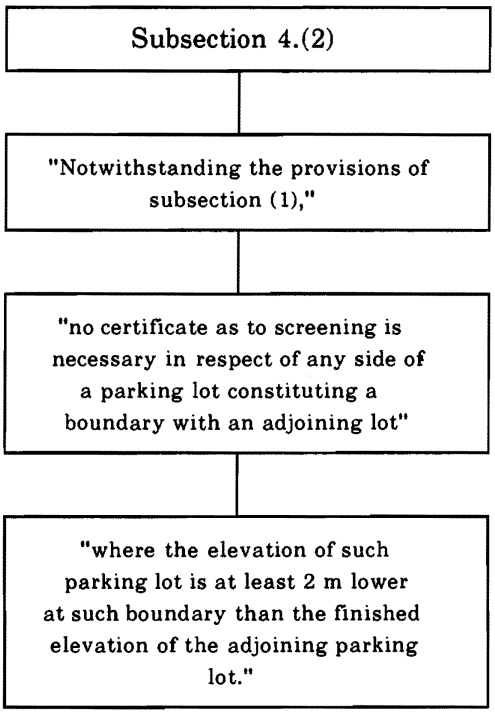

Figure 11: Structure of Subsection 4.(2)

So far, how the links between nodes representing clauses are inserted has been described. However, within a document segment, once the links between the generated objects (if any) are determined, a link must be established to connect these new objects with the one from which they were both derived. All of the derived objects will at least indirectly give support to the objects representing the document segment.

If there are no generated objects, that is, the text contained in the document segment cannot be further subdivided, the new object will be linked into the network supporting the document segment node. When objects are generated and links inserted by reference to the connectives marking the subordinate clause, at least one object will not have had a support-to link added to it. That is, in the context of this document segment, one object will not give support to any of the other objects. Any such object will be connected to the document segment node with a support-to link.

Thus, for example, in 4.(1)(a) two new objects will be generated.

Clause 4. (1)(a)
(a) [that the surface area of the parking lot has been completely paved] [and is adequately drained;]

Since the conjunction *and*, of the category "parallel-ordered", occurs at the beginning of one of the clauses, no support links will be established between them. They were derived from the object representing 4.(1)(a), and since neither is supporting any other object, both will support object 4.(1)(a) in the text network as shown in Figure 12.

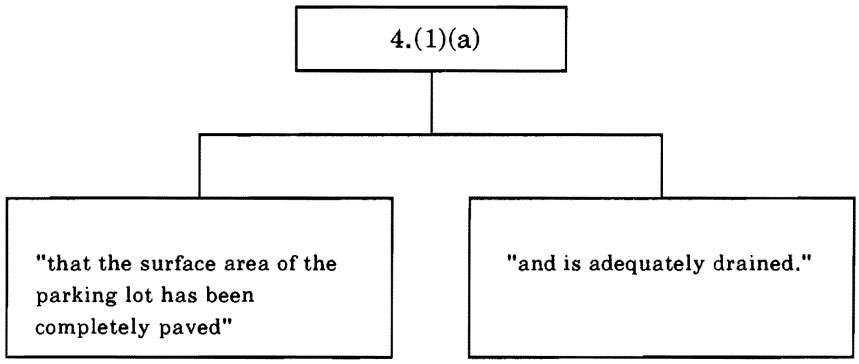

Figure 12: Structure of 4.(1)(a)

Examples used to illustrate connections made for clauses introduced by "pre-ordered" and "post-ordered" categories of conjunctions have all been illustrated with a link to the document segment. (See Figures 10 and 11). From these illustrations it should be clear that the object representing the main clause will be the one which does not support any other object locally. Thus, it will be directly linked to the document segment node with a support-to link. In the case of clauses introduced by conjunctions of the category "post-ordered", it will be the object representing the subordinate clause that will be linked in support of the document segment node.

5. Summary

In general, it appears that each of the function words addressed above has the effect of imposing a logical ordering between the node representing the clause or phrase it introduces and the node which is its associated main clause. So, not only do these words provide cues as to syntactic structure, but they also provide cues to the structure of the knowledge represented. This is the important structural characteristic which is the motivation for the processing method outlined here.

The **support network** of ACQUIRE, the knowledge acquisition software used in this research, defines an ordering relation between **objects** in a knowledge base. That is, the **support network** must link an **object** to all other **objects** that it supports and that support it.

Conjunctions have been treated as signals of the logical ordering between clauses in the text without addressing exactly what type of ordering is implied. Depending on the topic of the document, support could be one of the following types: temporal or causal dependence between events, actions, or propositions; elaboration of detail; or contrastive relationships. In spite of these distinctions, all of these kinds of "support" imply an ordering between pairs of nodes. This ordering is that part of the target knowledge representation with which this project has been concerned.

A similar approach to structuring discourse representation is taken by Grosz & Sidner (1986) in their analysis of two types of discourse, an essay and a task-oriented dialogue. They use two different relations, "supports" and "generates", which connect propositions in the essay and actions in the task dialogue, respectively. Although these two relations are intuitively quite different, both have the effect of ordering the components of discourse content. Grosz and Sidner also observe that hierarchical relations of the attentional structure that are explicitly marked by linguistic cues can be used to infer relations of the intentional structure. This is precisely what we are attempting to do here, but in the context of the sample Bylaw chosen for analysis.

The prototype system successfully generated a set of objects definitions for the sample document. These definitions were used to produce an object network in the ACQUIRE system. The resulting knowledge base was not as complete as that prepared manually; however, those parts of the network that were generated were accurate. The main source of incompleteness was in the topical or thematic organization among the document components. This is certainly to be expected since no lexical analysis was done. The methodology used by Shaw & Gaines (1987) for lexical analysis might yield another set of links among the objects on the database, imposing yet another ordering, this time based on topical relations.

The usefulness of the resulting knowledge base is limited by the technology available to fully implement the interface between the on-line text and the object definitions. Currently, the object definitions are simply labelled with the portions of the text to which they correspond. The facility to implement dynamic links between the knowledge base and the on-line text, a type of hypertext system, is necessary to make this type of system truly useful. The text associated with objects in the knowledge base does not necessarily provide enough information for a human user to interpret the object's meaning. The segments of text, out of context, are not always helpful. However, if these labels were augmented with links to the location of the segment in the document, users would be able to see the segment in its context and so allow them to correctly interpret each object.

The study has demonstrated that one part of the meaning of these conjunctions is to impose an ordering on components of semantic representation. The sequential or ordering nature of the relations signalled by all conjunctions is presented. This principle, then, has been used as the basis of a strategy for automatically extracting a knowledge representation from written texts. In addition to an analysis of conjunctions, linguistic research and perspective has been applied to knowledge acquisition. In doing so, it is hoped that the common questions of knowledge representation and acquisition addressed by discourse analysts in linguistics and

computer scientists have been further illuminated and the often suggested potential for cooperation between these fields demonstrated.

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OPPOSITION IN THE DISCOURSE OF ARGUMENT

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1. INTRODUCTION

The subject of this paper[1] is that speech activity known as **argument**, and by extension, **argument in any context**. To establish what argument is, and to understand it, we need to look at distinctions which have a greater dimension than formal context alone. Section 1 revises and expands our approach (see Shahin 1990) to accommodate the vagaries of real-time argumentative discourse. Sections 2 and 3 develop a method of analysis of argumentative discourse. The last section summarizes the advantages of this method and suggests how complementary analytic notions may be applied to the field of discourse analysis and argumentation.

O'Keefe's (1977, 1982) distinction between argument$_1$ and argument$_2$ has been instrumental in clarifying 'argument' and argumentation. Argument$_1$ is argument that is *made*, a 'linguistically-explicable claim plus one or more linguistically-explicable reasons'. 'Linguistically-explicable' does not mean *linguistically explicit*. Rather, argument$_1$ may be explicit or implicit, but one should "be able to *say what the argument$_1$ was*, to express linguistically both the claim and overtly expressed reasons" (O'Keefe 1982, p.13, italics in the original). So a clear example or *paradigm case* of argument$_1$ would be something like the following:

I don't want to go with you because I'm tired. I was up all night.

A *borderline case*, with its implicit claim and explicit reasons, would instead be something like the second utterance in the following exchange.

1. Speaker 1: Do you want to come with me?

2. Speaker 2: I'm tired. I was up all night.

O'Keefe's description of argument$_1$ seems correct, except that we question limiting discourse constraints to just overtly expressed reasons. 'Overtly-expressed' means 'present in the discourse'. Covert reasons like speaker's mood and the history of previous interactions between conversational partners, as well as covert 'reasonings' (unexpressed thoughts), may not show up as discourse and thus are not overtly expressed. Yet, we contend that not even argument$_1$ should be divorced from its discourse context. Such covert reasons and reasonings are present in a given discourse as 'non-discoursive elements' (Willard 1979), or forces which definitely may influence the verbal interaction. They should, then, qualify at least as implicit reasons for argument$_1$. And in fact, if the discourse data is extensive enough, reflecting a realistic interactional time-span, the covert reasons of one argument$_1$ might easily show up as an overt discourse element. By dropping the requirement that argument$_1$ reasons must be overtly-expressed, 'linguistically explicable' could simply mean that one should be able to express linguistically both the claim and the reasons.

Argument$_2$, on the other hand, is argument that is *had*. It is 'disputatious interaction' (O'Keefe and Benoit 1982), an 'overt extended disagreement' involving two or more persons. O'Keefe has noted that when two or more people have an argument$_2$, they may or may not produce arguments$_1$. However, we have found that arguments$_1$ are always present in arguments$_2$. These arguments$_1$ may be explicit or implicit, but they will always be linguistically-explicable. O'Keefe does not offer a paradigm case of argument$_2$, but a paradigm case (see Shahin, 1989) might be something like the following.[2]

> Mrs. Boyle: You're very young.
> Mollie: Young?
> Mrs. Boyle: To be running an establishment of this kind. You can't have had much experience.

In this exchange, Mrs. Boyle produces an explicit argument$_1$ (*Because you are very young to be running an establishment of this kind, you can't have had much experience*), and an implicit argument$_1$ which can be linguistically-explicated (*Because you are very young and can't have had much experience, you should not be running an establishment of this kind*).

Argument$_2$ is a speech activity, a discoursive process comprised of a particular type of speech act. The only candidate so far for this act is O'Keefe's 'making an argument', for it is the act associated with argument$_1$, as the 'communicative vehicle' by which argument$_1$ is conveyed. Yet, it seems that if one person performs the act of argument-making when producing argument$_1$, then each of the two or more persons having an argument$_2$ will perform this act as well, as they make their own arguments$_1$ in their individual turns-at-talk. For this reason we take another, more generic act as the basic act in argument$_2$ in the next section. By viewing argument$_2$ in terms of this other act, we can start to explain the structure and process of argument$_2$.

The method of analysis we develop in this paper is not restricted by features of discourse setting. It is important to dispel possible confusion arising from identifying argument$_2$ in a formal setting with the 'made' argument of argument$_1$. O'Keefe's distinction makes it clear that argument$_1$ and argument$_2$ are equally prototypical, and the process of argument$_2$ will always have as its product argument$_1$. O'Keefe himself does not like this process/product distinction because he feels argument$_1$ has its own processual features. If this is true, argument$_1$ has its own processual features, and these features will be different from the processual features of argument$_2$ as a *discourse process*.

Schiffrin (1985), for example, distinguishes between Rhetorical and Oppositional argument. Rhetorical argument involves one speaker presenting an 'intact monologue supporting a disputable position'. Oppositional argument occurs when 'two or more speakers openly support disputable positions'. Oppositional and Rhetorical argument are not mutually exclusive, for even in Rhetorical argument within formal settings, Oppositional argument (in the form of anticipated arguments$_2$) is present. Likewise, Oppositional argument may see speakers digressing into Rhetorical argument, depending partly on the length of turn a speaker is able to secure. Schiffrin's inclusion of 'support' and 'position' in her definitions of Rhetorical and Oppositional argument echoes the claim-plus-reasons of argument$_1$. This also agrees with our finding that argument$_1$ is always present in argument$_2$, and in section 3, it will be seen that arguments$_1$ are present in argument$_2$ on three distinct levels of the discourse.

To summarize, for O'Keefe arguments$_1$ are 'abstract objects', consisting of a linguistically-explicable claim plus one or more linguistically-explicable reasons. Opposi-

tional argument involves two or more persons in the speech activity of argument$_2$, in which they produce arguments$_1$. What this argumentation scheme is lacking, however, is a place for the speech activity of Rhetorical argument. O'Keefe appears to include Rhetorical argument with argument$_2$, since he actually defines argument$_2$ as 'ordinarily' involving two or more speakers. But Oppositional and Rhetorical argument are clearly distinct speech activities. We would propose a three-way distinction between **argument$_1$**, **argument$_2$** and **argument$_3$** (argument that is **given**).

Argument$_2$ and argument$_3$ are discourse processes and are engaged in by two or more speakers (argument$_2$) or even by one speaker (argument$_3$). Argument$_2$ may even incorporate argument$_3$. The speech act which is performed in argument$_2$ (as well as argument$_3$) permits the process by which argument$_1$ is produced. The nature of the speech act that forms the basis of argument$_2$, and its structure in terms of this act, is the subject of the next section.

2. THE STRUCTURE OF ARGUMENT$_2$

O'Keefe and Benoit (1982, p. 155) describe arguments$_2$ as distinctive and coherent events, in that "it is easy to see in most cases just where an argument started and when it ended. And the particular actions which occur within an argument all appear to occur relevantly, given that we know an argument is occurring." Their description raises the three issues of initiation, resolution, and internal structure for argument$_2$. In this section, we explore these factors, for displaying the internal cohesion of argument$_2$ also allows us to show how an argument$_2$ begins and ends.

The Mrs. Boyle example in section 1 was glossed as a paradigm case of argument$_2$, but is it a paradigm case? A *paradigm case* would be a clear example and should elicit agreement that it is indeed a case of argument$_2$ (O'Keefe 1982). O'Keefe and Benoit reject the paradigm case approach on the grounds that argument$_2$ is an inherently 'fuzzy' concept. This fuzziness is "due, in part, to the diversity of behaviours employed in argumentative episodes" (p.162). Instead, they suggest a 'generic characteristic' approach, which involves 'identifying features' to provide a characterization of argument$_2$. We suggest that a list of generic features, derived from argument$_2$ data, are based on clear examples of argument$_2$, and the 'generic characteristic' approach is simply a method of arriving at a 'paradigm case' for argument$_2$. We also feel that to describe argument$_2$ as 'fuzzy' contradicts even the notion of a 'generic characteristic' approach. Thus, we employ the generic characteristic approach to exemplify and explicate the basic structure of argument$_2$, and by so doing, offer a substantiated paradigm case for argument$_2$.

O'Keefe and Benoit identify one generic feature of argument$_2$ as the 'relationship of opposition between participants'. That is, "interactants. . .align themselves in mutually inconsistent ways" toward some goal(s), act(s) or belief(s)" (p. 162-63).[3] In simplest terms, when speakers argue, they disagree, and this relationship of opposition between participants is a fundamental characteristic of argument$_2$.

The feature *opposition* operates on three distinct discourse levels in argument$_2$. The first is the Interactional Level (IL). On the IL, argument$_2$ participants define their relationship as oppositional. IL *opposition* is a contextual feature, since it refers to interpersonal relationship, but it is also a discourse feature, since it is a relationship between turns-at-talk. The second level is the Topic Level (TL), for interactants align themselves in differing ways *toward some goal(s), act(s) or belief(s).* The third level is the Sentence Level (SL), where base propositions are defined as oppositional to each other. These IL, TL, and

SL distinctions reflect the fact that argument$_2$ involves opposition not only between speakers, but also between their utterances over what is spoken, over what is spoken about, and over what is said about what is spoken about.

The discourse display of *opposition* is a **Formulation/Decision (F/D)** speech act pair. Fs have been used in previous studies (Garfinkel and Sacks, 1970; Heritage and Watson, 1979; Bilmes, 1981) to refer to summaries of conversational topic, but some (Bilmes, 1985) suggest that this is too restrictive, since there are countless ideas that speakers can formulate in words. Following this lead, we define a F as a *a speaker's personal composition, or representation, of a 'fact'*, and we take the speech act of **Formulation (F)** as the basic act in argument$_2$. As an example, consider the following conversational contribution.

> Youth Pastor: The nuclear war has misdirected the youth.

By this F, the Youth Pastor has formulated in words the effect of 'the nuclear war' on the youth, thus representing this 'fact' and entering it into the discourse. A representation of a 'fact' is thus produced whenever a speaker puts something into words, and is realized as an F whenever a speaker puts it into the discourse. The 'fact' is a fact, however, only insofar as the speaker sees it to be one. In the example above, the Youth Pastor has formulated *his evaluation* of the effect of the nuclear war on the youth. Because Fs are subjective, the 'fact' represented may or may not be a 'fact' for the hearer of the F. This subjectivity means that argument$_2$ is an ever-present possibility in discourse.

But not all Fs are equal; some are more implicit, at a higher level of abstraction in the discourse. This problem can be solved by identifying Fs on three discourse levels in argument$_2$: Fs may be IL, TL or SL Fs. All three types of Fs can be a speaker's personal composition, or representation, of a 'fact'. In this section, most examples of Fs are SLFs (examples of ILFs and TLFs are given in section 3).

Our data is a transcript of argument$_2$ produced in a laboratory setting by four subjects, wherein each person speaks as a character personally chosen for the sake of the experiment.[4] The characters are Youth Pastor (YP), Musician (MUS), Doctor (DR) and Computer Scientist (CS). The speakers were directed to argue as pairs against an opposing pair, attempting to influence which pair should be allowed to use 'the bomb shelter' in the event of a nuclear war. 'Government officials' would view a videotape of their discussion and from it decide which pair should be allowed to use the bomb shelter. Discussion was allowed to continue for approximately four minutes. The experiment supervisor then entered the room, assigned a new speaker pairing, and directed the speakers to resume discussion. This was done twice, yielding three separate sets of arguments$_2$.

A SLF is an argument-making act, producing an explicit claim (EC). For example, The F in the Youth Pastor's contribution produces the EC *The nuclear war has misdirected the youth.* The ECs of two Fs together may produce an explicit argument$_1$ (EA$_1$), as in the following.

> Musician: I worry about leaders who say 'my faith' and 'my view' because I think that's why we are where we are.

The example above consists of the two SLFs seen in (1) and (2).

1. SLF: I worry about leaders who say 'my faith' and 'my view'.

2. SLF: I think that's why we are where we are.

A SLF can also produce an implicit claim (IC) or an implicit argument$_1$ (IA$_1$). The Musician's contribution produces the IC *There is something wrong with leaders who say 'my faith' and 'my view'.* It can also produce the IA$_1$ *Because there is something wrong with leaders who say 'my faith' and 'my view', we don't want such leaders.*

Garfinkel and Sacks (1970) claimed Fs as valid 'formal structures' of discourse, setting out the following criteria for Fs as speech activities.

> activities (a) in that they exhibit upon analysis the properties of uniformity, reproducibility, repetitiveness, standardization, typicality, and so on; (b) in that these properties are independent of particular production cohorts; (c) in that particular-cohort independence is a phenomenon for members' recognition; and (d) in that the phenomena (a), (b), and (c) are every particular cohort's practical, situated accomplishment (p. 346).

This list can be clarified and adapted to Fs as follows:

> Formulations are valid formal structures of discourse because they are acts
> (a) which have uniform and typical features
> (b) which occur throughout discourse
> (c) which may be reproduced by speakers
> (d) whose properties (listed in (a), (b) and (c)) are properties of the discourse proper (not of the speakers-as-part-of-discourse-context)
> (e) which speakers recognize as part of the discourse proper
> (f) which have local, practical function in discourse

Fs are formal structures of discourse because they are acts which uniformly and typically occur whenever a speaker puts something into words. They are a speaker's personal composition, or representation, of a 'fact', and are performed on the IL, TL and SL of discourse. Fs on each of these levels are argument-making acts; the arguments$_1$ may be explicit or implicit, but they will always be linguistically-explicable. Speakers and hearers readily recognize Fs as discourse elements, since they can isolate and comment on them. This occurs, for example, when a speaker says something like "In other words, what you mean is . . . ." Re-Formulations are new Fs and may be quite different from an original F.

Fs have a practical function in argument$_2$, and play a key role as the first act in a Formulation/Decision (F/D) speech act pair. Heritage and Watson (1979) note "that formulations occasion receptions ... but also that the character of their receptions is sharply constrained to confirmations or disconfirmations, or, more generally, decisions" (p.141). Examples of the F/D+ pair can be seen in the pairing below.

1. F by Comp. Scientist: Well, I think the problem that's been in the past, the people who've been in control of the technology haven't been the people creating the technology.

2. D+ by Musician: Right!

A D- is often performed by conversational implicature, as in the pairing below. By itself, the supplication *God save us from a good Christian religion* is a paradoxic F producing the IC *A good Christian religion should be avoided.* By illocutionary force, it also

produces the IC *We don't want a good Christian religion,* as well as the IA_1 *Because we don't want a good Christian religion, we don't need you, Youth Pastor.* This use of conversational implicature to achieve illocutionary force is pervasive in $argument_2$.

1. F by Youth Pastor: You need the life of botany and zoology and the love of a good Christian religion, and direction for the people, and -

2. D- by Comp. Scientist: God save us from a good Christian religion.

Every Decision (D) is itself a F, with all the features of a F. As a D, it also stands in a binary relation to a previous F. A D+ is a con-Formulation, and a D- is a counter-Formulation to a previous F. The F/D- pair is the basic discourse display of the generic feature *opposition* in $argument_2$. In non-argumentative discourse, the F/D- pair does not occur. In fact, Ds themselves may not occur, for the co-locutor may utter a F which is not in relation to an initial F. When this occurs, the new speaker has made a topic shift. The existence of F/F pairs means that, in non-argumentative discourse, the conditional relevance between a F and D may be relaxed. But in $argument_2$, conditional relevance is strict. Decisions are always present, at least initially; they are also constrained, at least initially, to disconfirmations.

The fact that every D is itself a F provides for the on-going process of $argument_2$. As a F, every D itself requires a D. This means that the full basic structure of an $argument_2$ is a F/D-/D-... sequence. An example of this can be seen in the following ordering: the first two utterances in the example are only an argumentative exchange, A F/D- pair; this becomes an $argument_2$ with the initiation of uptake.

> F by Comp. Scientist: A lot of wars were created by a [good Christian religion] -
> D- by Youth Pastor: But science and the computers have led us into the technology of creating nuclear wars.
> D- by Comp. Scientist: Well, I think the problem that's been in the past, the people who've been in control of the technology haven't been the people creating the technology.

The F/D-/D- sequence is the minimal $argument_2$. This contrasts with O'Keefe's presentation of the F/D- pair as a 'minimal $argument_2$', though even for O'Keefe this is not a 'paradigm case' of $argument_2$. In this study, a minimal $argument_2$ and a 'paradigm case' of $argument_2$ are the same thing. A simple distinction between *initiation of uptake* and *uptake* of $argument_2$ illustrates why it is not the F/D- pair, but the F/D-/D- sequence that is the minimal $argument_2$.

The following exchange is only an argumentative exchange, a F/D- pair. It could have *become* an $argument_2$, but for that the initiation of uptake by the Youth Pastor needs uptake. Uptake occurs when there is disagreement to disagreement. Another glance at the example shows that uptake to this F/D- pair occurs, since the Computer Scientist's next utterance is a D-. When uptake occurs, an $argument_2$ has been realized.

1. F by Comp. Scientist: A lot of wars were created by a [good Christian religion] -

2. D- by Youth Pastor: But science and computers have led us into the technology of creating nuclear wars.

3. D- by Comp. Scientist: Well, I think the problem that's been in the past, the people who've been in control of the technology haven't been the people creating the technology.

The F/D-/D- sequence as the minimal argument$_2$ matches interactional analysis research (Millar, Rogers and Bavelas, 1984), which defines interpersonal conflict as 'three consecutive one-up moves'. The F/D-/D- acts correspond to this 'transaction', and stand in a symmetrical relationship to each other (see Watzlawick, Bavelas and Jackson 1969).

3. THE PROCESS OF ARGUMENT$_2$

In this section, we illustrate the internal structure of argument$_2$ in both the nature of Fs within a turn-at-talk and the relationship between Fs as F/D pairs. Our analysis of the first argument$_2$ of our data is driven by the following three goals.

(1) to distinguish a speaker's overall (IL) F from its sub-Formulations (TLFs and SLFs)
(2) to explain the relationship between all Fs in a single turn
(3) to explain the relationship between all Fs in the argument$_2$

The first discourse turn of our data, an F by the Youth Pastor can be thus analysed as:

1. F_1: So, I guess

   a. (f_1) the argument's what's gonna happen with life after a nuclear war and twelve months of living in the bomb shelter.

   b. And (f_2) there's gotta be hope afterwards.

2. F_2: And I propose that

   a. (f_3) with leadership and a very sense of loyalty to the youth -

   b. and (f_4) the nuclear war has mis-directed the youth.

   c. (f_5) After we get out, with my leadership, I think direct the youth into a new and better life

   d. (f_6) instead of nuclear war again

   e. and (f_7) living in a world of peace and love

   f. (f_8) which my faith believes in

   g. And (f_9) we can avoid such a nuclear holocaust again.

Simply by speaking, the Youth Pastor has performed an ILF F, formulating in words what he had to say for his turn at talk. The 'fact' represented by an ILF is the gist of what a speaker has to say. For example, the gist of this F is that he should be allowed to go into the bomb shelter. An ILF produces an IC, implicit because it is expressed through an entire turn, not a base proposition. This F produces the IC *I should be allowed to go*

into the bomb shelter. An ILF may also produce an IA_1, in this case the IA_1 *Because I have provided the solution to the problem, I should be allowed to go into the bomb shelter.*

Non-initial IL Ds produce a definition of interpersonal relationship. An ILD defines the relationship between its speaker and a previous speaker as solidary when it is a D+, but as oppositional when it is a D-. In this case, the IL D (as a F) is more of a personal representation than a personal composition of the 'fact' of interpersonal relationship, since the 'fact' is not necessarily composed in words within the ILD.

A TLF is a speaker's personal composition, or representation, of a topic of discourse. The Youth Pastor's ILF consists of two TLFs, F_1 and F_2. F_1 is his evaluation of the problem of the discourse at hand. F_2 is his evaluation of the solution to this problem. A TLF produces an IC: F_1 produces the IC *The problem at hand is that life after a nuclear war is uncertain;* F_2 produces the IC *The solution to this problem is my religious leadership and loyalty to the youth.*

A TLF can also produce a IA_1: F_2 produces the IA_1 *Because the solution to this problem is my religious leadership and loyalty to the youth, I should be allowed into the bomb shelter.* Together, two TLFs can produce an IA_1, and thus F_1 and F_2 produce the IA_1 *Because the problem at hand is that life after a nuclear war is uncertain, I propose that the solution to this problem is my religious leadership and loyalty to the youth.*

The 2 TLFs by the Youth Pastor each consist of specific sub-Formulations. These are his SLFs, previously numbered as f_{1-9}. Recall that a SLF is a speaker's personal composition, or representation of a 'fact'. Each SLF produces an EC, and may also produce an IC and an IA_1. And two or more SLFs together may produce an EA_1, an IA_1 or a partially explicit, partially implicit argument$_1$ (E/IA_1). Obscured by syntactic structure, linguistic explication of an EC is someimes required. For example, the EC of the subordinate clause (f_7) *living in a world of peace and love* is explicated as *After we get out, with my leadership I think I can direct the youth into living in a world of peace and love.* The complex E/IA_1 produced by the YP's f_{3-9} (with implicit elements starred) is:

1. *because (f_3) *loyalty and a sense of leadership to the youth are important

2. (f_4) *because the youth need **something**

   *because the nuclear war has misdirected the youth.

3. *and because (f_5) after we get out, with my leadership I think I can direct the youth into a new and better life

4. *and because (f_6) after we get out, with my leadership I think I can direct the youth not into a nuclear war again

5. *and because (f_7) after we get out, with my leadership I think I can direct the world into living in a world of peace and love

   *because my faith believes in living in a world of peace and love

6. *therefore (f_9) we can avoid such a nuclear holocaust again

It is the linguistic explication of this argument$_1$ which makes sense of f_{3-9}, and of their specific ordering within the F_2.

Fs need not be analysed for their every possible argument$_1$ product. Only those products need be analysed which are instrumental in the process of an argument$_2$, i.e., responded to by a hearer-as-subsequent-speaker. Doing this lessens the subjectivity of the analyst and focusses on the process of the argument$_2$. For the discourse participants, an F is a subjective entity in that (1) it is a speaker's *personal composition, or representation,* of a 'fact' (or more than one 'fact', if the F produces more than one claim) (2) it is subject to a hearer's *personal perception* of what 'facts' are represented and to the hearer's *personal evaluation* of those 'facts'.

The Youth Pastor's turn can be thus represented by two formulaic sequences. The first sequence shows the exclusively implicit, higher level contents of the turn, by showing the relationship between the TLFs within the ILF. The second sequence shows the sentence level contents of each TLF, and the relationship between SLFs within the TLF.

$$(1)\ \{(F_1)F_2\}_{F}$$

$$(2)\ \{[f_1f_2]_{F_1}[(f_3(f_4),f_5f_6,f_7(f_8))f_9]_{F_2}\}_{F}$$

An analysis of the formal components of the first argument$_2$ of our data is given in Table 1. Table 2 then presents the formulaic sequences for each of the discourse turns in this argument$_2$ on the each of its levels, that is, the Interactional, Topic, and Sentence Levels. These formulaic summarizations capture the simultaneous function of all Fs as members of both the discourse turn and the argument$_2$.

Table 1. Data Analysis for the Pairs

1. F by Youth Pastor:

   a. F_1: So, I guess

      i. (f_1) the argument's what's gonna happen with life after a nuclear war and twelve months of living in the bomb shelter.

      ii. (f_2) And there's gotta be hope afterwards.

   b. F_2: And I propose that

      i. (f_3) with leadership and a very sense of loyalty to the youth -

      ii. and (f_4) the nuclear war has misdirected the youth.

iii. (f_5) After we get out, with my leadership I think can direct the youth into a new and better life

iv. (f_6) instead of nuclear war again

v. and (f_7) living in a world of peace and love

vi. (f_8) which my faith believes in.

vii. And (f_9) we can avoid such a nuclear holocaust again.

2. D– by Musician:

a. $D-_1$: Well, I guess my opinion would be that

i. ($d-_1$) I worry about leaders who say 'my faith' and 'my view'

ii. because (f_2) I think that's why we are where we are.

b. $D-_2$: And it seems to me that

i. (f_3) medicine and music and philosophy are those things which provide people with a means of looking at the world and assessing it and creating a better world

ii. ($d-_4$) without the kind of conviction of a leader who thinks that he or she is right.

iii. and that ($d-_5$) science and religion have failed us in terms of this modern world.

iv. and that (f_6) medicine and music are non-judgmental.

v. (f_7) They're things that are for all people.

vi. (f_8) They're entirely focussed on the beneficial aspects of human behaviour.

vii. (f_9) And what we're going to need in this new world are people who are in the helping professions, people who are giving, who are creating, who are helping people to think and to experience a better form of life.

c. $D-_3$: So I think that

i. ($d-_{10}$) Bob and I should definitely be the two people who go into this shelter.

3. D– by Comp. Scientist:

a. $D-_1$: No, I might agree that

i. ($d+_1$) you need some people who are in the helping professions but

ii. ($d-_2$) you also need some people who are involved in the more hard sciences

iii. because (f_3) if you have a whole bunch of people involved in the helping professions and only one person who's in the hard sciences, you may end up with a situation where you end up in the same nuclear war that we're in now

iv. because (f_4) you don't have enough people monitoring the situation or understanding the situation well enough to prevent it from happening again.

b. $D-_2$: And I think

i. (f_5) I will be able to, as a scientist, I will be able to help my associate in talking with the youth and explaining how we can prevent it from happening again.

ii. ($d-_6$) From my background and his background I think we would be an excellent team to discuss with the youth about how to prevent this from happening again.

4. **D**- by Doctor:

a. $D-_1$: I think that

i. ($d+_1$) there's some advantages to being a scientist that works almost exclusively with computers

ii. but (f_2) in getting my doctoral in Public Administration I had to aquire a lot of knowledge about computers.

iii. I think that ($d-_3$) as far as computer programming and utilization of computers, I would do quite an adequate job.

b. $D-_2$:

i. (f_4) I've also had a lot of experience working with people.

ii. ($d+_5$) The people that I'm working with aren't young people.

iii. (f_6) They're primarily people on the medical staff at the hospital.

iv. But I think that ($d-_7$) the skills that I've acquired would certainly put me in a position to deal with young people as well.

c. $D-_3$: And I think that

i. where (f_8) my strengths are in the sciences

ii. ($d-_9$) we need somebody that's a well-recognized individual to help promote the culture that we've developed.

iii. (f_{10}) We don't want to lose the culture.

iv. (f_{11}) If individuals lose their culture, they're going to feel a much greater loss than they would by just having lost friends and relatives.

d. $D-_4$: So I think that

i. ($d-_{12}$) it's important that we maintain the level of knowledge that we have now in botany and zoology and Administration, and that we continue with the arts.

Table 2. Formulaic Summary of Turns

1. Youth Pastor

   a. Interactional Level:

      F by Youth Pastor

   b. Topic Level:

      $\{(F_1)F_2\}$

   c. Sentence Level:

      $\{[f_1f_2][(f_3(f_4),f_5f_6,f_7(f_8))f_9]\}$

2. Musician

   a. Interactional Level:

      D– by Musician:

   b. Topic Level

      $\{(D-_1\ D-_2)D-_3\}$

   c. Sentence Level:

      $\{[d-_1(f_2)][f_3(d-_4),d-_5f_6f_7f_8f_9][d-_{10}]\}$

3. Computer Scientist

   a. Interactional Level:

      D– by Computer Scientist

   b. Topic Level:

      $\{(D-_1)D-_2\}$

   c. Sentence Level:

      $\{[d+_1\ d-_2(f_3(f_4))][(f_5)d-_6]\}$

4. Doctor

   a. Interactional Level:

      D– by Doctor:

   b. Topic Level:

      $\{(D-_1\ D-_2\ D-_3)D-_4\}$

c. Sentence Level:

$$\{[d^{+}_{1},(f_2)d^{-}_{3}][(f_4,d^{+}_{5}\ (f_6))d^{-}_{7}]\ [(f_8)d^{-}g(f_{10}(f_{11}))][d^{-}_{12}]\}$$

Uptake of argument$_2$ is co-secured by an F/D-/D- sequence on each of the Interactional, Topic, and Sentence Levels of the discourse. Tables 2 and 4 show the IL F/D-/D- sequence of this argument$_2$ to be realized as **F/D-/D-/D-**,[5] and also defines each discourse turn as oppositional to the previous turn.

The minimal TL F/D-/D- sequence is realized as F F/D- D- D-/D- D-/D- D- D- D-. Argument$_2$, of course, will allow several TLFs per discourse turn, but the function of these Fs (realized as Fs or Ds) and the response-type of Ds (as + or -) is consistent per turn. We represent the TL F/D-/D- sequence of this argument$_2$ (with **m > 0**) as: $F_m/D^{-}_{m}/D^{-}_{m}/D^{-}_{m}$.

In turn, the minimal SL F/D-/D- sequence by the four participants is actually realized as:

1. f f f f f f f f f

2. d- f f d- d- d- f f f d-

3. d+ d- f f f d-

4. d+ f d- f d+ f d- f d+ f f d-

This does not at first seem to be a coherent F/D-/D- sequence, but if we link the SLFs as members of particular TLFs, with claims or reasons in particular arguments$_1$, the SL F/D-/D- sequence becomes appparent. That is, in the SL F/D-/D- sequence of argument$_2$,

1. one SLF per TLF is mandatory, though more than one may occur

2. a SLF serving as simple claim in a TL D-, in subsequent turns like D^{-}_{2} and D^{-}_{3}, is mandatory, but more than one may occur

3. one or more SL F or D+ may also serve as simple claim in a TL D- in D^{-}_{2} and D^{-}_{3}

SLFs serving as reasons in an argument$_1$ in a TLF of D^{-}_{2} and D^{-}_{3} may occur as F, D- or D+ and may be several in number. The SL F/D-/D- sequence of argument$_2$ (with **m > 0**) may be represented as:

$$(F_m)_m\ /\ (D^{-}_{m}\quad (D^{-}_{m}F_m)\quad (D^{-}_{m}D^{+}_{m})\quad (D^{-}_{m}F_mD^{+}_{m}))_m\ /$$

$$(D^{-}_{m}\quad (D^{-}_{m}F_m)\quad (D^{-}_{m}D^{+}_{m})\quad (D^{-}_{m}F_mD^{+}_{m}))_m$$

The F/D-/D- sequence, then, occurs on all three levels of argument$_2$ discourse. The full sequence of argument$_2$, with m > 0, can be represented as the following F/D-/D- sequence which secures uptake of argument$_2$

$FF_m(f_m)_m/D\text{-}D\text{-}_m(d\text{-}_m \quad (d\text{-}_m f_m) \quad (d\text{-}_m d+_m) \quad (d\text{-}_m f_m d+_m))_m/$

$D\text{-}D\text{-}_m(d\text{-}_m \quad (d\text{-}_m f_m) \quad (d\text{-}_m d+_m) \quad (d\text{-}_m f_m d+_m))_m$

The full F/D-/D- sequence of argument$_2$ ensures the presence of the generic feature 'opposition' on all levels of the discourse, and across all turns at talk. This feature is displayed in a D- of any level, which implies a F/D- pair. The presence of *opposition* makes argument$_2$ a coherent event. While ensuring this coherence, the full F/D-/D- sequence of argument$_2$ permits TL and SL Fs in second or subsequent turns at talk to function as Fs. This allows speakers to engage in argument$_3$, supporting their positions by Fs which are not in relationship to any previous F in the discourse. SLFs in second or subsequent turns at talk may also function a D+ resulting in 'prefaced disagreement' (Pomerantz, 1975).[6]

The argument$_1$ products of each Formulation, which are instrumental in the argument$_2$, are linguistically explicated in Table 3. The implicit elements are starred, following the sequence of their inferred contribution to the argument. Finally, it is thus possible to achieve a complete analysis, by showing not just the *product* of the argument$_2$, but its *process* on all three levels, the Interactional Level, the Topic Level, and the Sentence Level. This is what Table 4 attempts to display in formulaic terms, indicating not just the formal, explicit elements, but also the implicit and inferred elements which constitute the essence of the real argument.

Table 3. F Argument$_1$ Products

1. F_1 by YP:

   a. *IC: The YP should be allowed into the bomb shelter.

   b. *IA_1: Because the YP should be allowed into the bomb shelter, the CS should also be allowed, and the MUS and DR should not be allowed into the bomb shelter.

2. $D-_2$ by MUS:

   a. *IC: The MUS and DR should be allowed into the bomb shelter.

   b. *IA_1: Because the MUS and DR should be allowed into the bomb shelter, the YP and CS should not be allowed into the bomb shelter.

3. $D-_3$ by CS):

   a. *IC: The YP and CS should be allowed into the bomb shelter.

   b. *IA_1: Because the YP and CS should be allowed into the bomb shelter, the MUS and DR should not be allowed into the bomb shelter.

4. $D-_4$ by DR:

   a. *IC: The MUS and DR should be allowed into the bomb shelter.

   b. *IA_1: Because the MUS and DR should be allowed into the bomb shelter, the YP and CS should not be allowed into the bomb shelter.

5. F_1 by YP:

   a. *IC: The problem at hand is that life after a nuclear war is uncertain.

6. F_2 by YP:

   a. *IC: The solution for the new world is my (YP's) religious leadership and loyalty to the youth.

   b. *IA_1: Because the solution for the new world is my (YP's) religious leadership and loyalty to the youth, I (YP) should be allowed into the bomb shelter.

7. $D-_3$ by MUS:

   a. *IC: The YP's religious leadership and loyalty to the youth are not the solution for the new world.

   b. *IA_1: Because the YP's religious leadership and loyalty to the youth are not the solution for the new world, the YP should not be allowed into the bomb shelter.

8. $D-_4$ by MUS:

a. *IC: Medicine and music are the solution for the new world.

b. *IC: Medicine and music are the only solution for the new world.

c. *IA_1: Because medicine and music are the only solution for the new world, the YP's religious leadership and loyalty to the youth are not the solution for the new world.

9. $D-_5$ by MUS:

a. *IC: The MUS and DR should be allowed into the bomb shelter.

b. *IA_1: Because the MUS and DR should be allowed into the bomb shelter, the YP and CS should not be allowed into the bomb shelter.

10. $D-_6$ by CS:

a. *IC: The hard sciences are part of the solution for the new world.

b. *IA_1: Because the hard sciences are part of the solution for the new world, medicine and music cannot be the only solution for the new world.

11. $D-_7$ by CS:

a. *IC: The YP and CS should be allowed into the bomb shelter.

b. *IA_1: Because the YP and CS should be allowed into the bomb shelter, the MUS and DR should not be allowed into the bomb shelter.

12. $D-_8$ by DR:

a. *IC: The CS is not needed in the new world.

b. *IA_1: Because the CS is not needed in the new world, the CS should not be allowed into the bomb shelter.

13. $D-_9$ by DR:

a. *IC: The YP is not needed in the new world.

b. *IA_1: Because the YP is not needed in the new world, the YP should not be allowed into the bomb shelter.

14. $D-_{10}$ by DR:

a. *IC: The MUS is needed in the new world.

b. *IA_1: Because the MUS is needed in the new world, the MUS should be allowed into the bomb shelter.

15. $D-_{11}$ by DR:

a. *IC: The MUS and DR are needed in the new world.

b. *IA_1: Because the MUS and DR are needed in the new world, the MUS and DR should be allowed into the bomb shelter.

16. f_1 by YP:

a. EC: The argument's what's gonna happen with life after a nuclear war and twelve months of living in the bomb shelter.

17. f_2 by YP:

a. EC: There's got to be hope afterwards.

18. f_3 by YP:

a. *IC: Leadership and loyalty to the youth are important.

b. *IC: The youth are important.

19. f_4 by YP:

a. *IC: The youth are important.

20. f_5 by YP:

a. *IC: My (YP's) leadership is important.

b. *IC: The youth are important.

21. f_6 by YP:

a. *IC:My (YP's) leadership is important.

b. *IC: The youth are important.

22. f_7 by YP:

a. *IC: My (YP's) leadership is important.

b. *IC: The youth are important.

23. f_8 by YP:

a. *IC: Religious faith is morally good.

b. *IA_1: Because religious faith is morally good, my (YP's) religious leadership is desirable for the new world.

24. f_9 by YP:

a. *IC: With my (YP's) religious leadership and loyalty to the youth we can avoid another nuclear war.

b. *IA_1: Because with my (YP's) religious leadership and loyalty to the youth we can avoid another nuclear war, I (YP) should be allowed into the bomb shelter.

25. $d-_{10}$ by MUS:

a. *IC: There is something wrong with religious leaders.

b. *IA_1: Because there is something wrong with religious leaders, the YP's religious leadership is not desirable for the new world.

26. $d-_{11}$ by MUS:

a. *IC: Religious leaders caused the last nuclear war.

b. *IA_1: Because religious leaders caused the last nuclear war, the YP might cause another nuclear war, and therefore the YP shouldn't be allowed into the bomb shelter.

27. f_{12} by MUS:

a. EC: Medicine and music and philosophy are those things which provide people with the means of looking at the world and assessing it and maybe creating a better world.

28. $d-_{13}$ by MUS:

a. *IC: Medicine and music do not involve religious conviction.

b. *IC: Religious conviction is to be avoided.

c. *IA_1: Because medicine and music do not involve religious conviction, and because religious conviction is to be avoided, medicine and music are desirable for the new world.

29. $d-_{14}$ by MUS:

a. *IC: Science and religion caused the last nuclear war.

b. *IA_1: Because science and religion caused the last nuclear war, they are not the solution for the new world, and therefore the YP's religious leadership is not the solution for the new world.

30. f_{15} by MUS:

a. EC: Medicine and music are non-judgmental.

b. *IC: To be non-judgmental is good.

c. *E/IA_1: Because medicine and music are non-judgmental, and to be non-judgmental is good, therefore medicine and music are desirable for the new world.

31. f_{16} by MUS:

a. *IC: To be for all people is to be non-judgmental.

32. f_{17} by MUS:

a. *IC: To be entirely focussed on the beneficial aspects of human behaviour is to be non-judgmental.

33. f_{18} by MUS:

a. EC: What we're going to need in this new world are people who are in the helping professions, people who are giving and who are creating, who are helping people to experience a better form of life.

34. $d-_{19}$ by MUS:

a. EC: Bob (DR) and I (MUS) should definitely be the two people who go into this shelter.

b. *E/IA_1: Because Bob (DR) and I (MUS) should definitely be the two people who go into the bomb shelter, the YP and CS should not be allowed to go into the bomb shelter.

35. $d+_{20}$ by CS:

a. EC: You need some people who are in the helping professions.

36. $d-_{21}$ by CS:

a. EC: You also need some people who are involved in the more hard sciences.

b. *IC: People in the helping professions are not the only people you need.

37. f_{22} by CS:

a. EC: If you have a whole bunch of people that are involved in the helping professions and only one person who's in the hard sciences, you may end up with a situation where you end up in the same nuclear war that we're in now.

38. f_{22} by CS:

a. EC: If you have a whole bunch of people that are involved in the helping professions and only one person who's in the hard sciences, you don't have enough people monitoring the situation or understanding the situation well enough to prevent it from happening again.

39. f_{24} by CS:

a. *IC: Being a scientist is important.

b. *IC: Being able to talk with the youth is important.

c. *IC: The youth are important.

40. d^{-}_{25} by CS:

    a. EC: From my (CS's) background and his (YP's) background I think we (YP and CS) would make an excellent team to discuss with the youth about how to prevent this from happening again.

    b. *IC: Talking with the youth is important.

    c. *IC: The youth are important.

    d. *E/IA_1: Because from my (CS's) background and this (YP's) background I think we (YP and CS) would make an excellent team to discuss with the youth about how to prevent this from happening again, and because talking with the youth is important, and because the youth are important, therefore the YP and I (CS) should be allowed into the bomb shelter.

41. d^{+}_{26} by DR:

    a. *IC: Being a scientist is important.

    b. *IC: Working with computers is important.

42. f_{27} by DR:

    a. EC: In getting my (DR's) doctoral in Public Administration I (DR) had to acquire a lot of knowledge about computers.

43. d^{-}_{28} by DR:

    a. *IC: I (DR) have the same capabilities with computers as the CS.

    b. *IA_1: Because I (DR) have the same capacity with computers as the CS, the CS is not needed in the new world, and therefore the CS should not be allowed into the bomb shelter.

44. f_{29} by DR:

    a. EC: I've (DR) also had a lot of experience working with people.

45. d^{+}_{30} by DR:

    a. *IC: Working with the youth is important.

    b. *IC: The youth are important.

46. f_{31} by DR:

    a. EC: The people I've (DR) been working with are primarily people on the medical staff at the hospital.

    b. *IC: People on the medical staff at the hospital are young.

47. d^{-}_{32} by DR:

a. *IC: I (DR) have the same capabilities in talking with the youth as the YP and CS.

b. *IA_1: Because I (DR) have the same capabilities in talking with the youth as the YP and CS, the YP and CS are not needed in the new world, and therefore the YP and CS should not be allowed into the bomb shelter.

48. f_{33} by DR:

a. EC: My (DR's) strengths are in the sciences.

49. $d\text{-}_{34}$ by DR:

a. EC: We also need somebody that's a well-recognized individual to be able to continue to promote the culture that we've developed.

b. *IC: The MUS is a well-recognized individual.

c. *E/IA_1: Because we also need somebody that's a well-recognized individual to be able to continue to promote the culture that we've developed, the MUS should be allowed into the bomb shelter.

50. f_{35} by DR:

a. EC: We don't want to lose the culture.

51. f_{36} by DR:

a. EC: If individuals lose their culture, they're going to feel a much greater loss than they would be just having lost friends and relatives.

52. $d\text{-}_{37}$ by DR:

a. EC: It's important that we maintain the level of knowledge that we have now in botany and zoology and Administration and that we continue with the arts.

b. *EC: Having me (DR) around in the new world will ensure that we maintain the level of knowledge that we have now in botany and zoology and Administration.

c. *EC: Having the MUS around in the new world will ensure that we continue with the arts.

d. *E/IA_1: Because it is important that we maintain the level of knowledge tha we have now in botany and zoology and Administration and that we continue with the arts, and because having me (DR) around in the new world will ensure that we maintain the level of knowledge that we have now in botany and zoology and Administration, and because having the MUS around in the new world will ensure that we continue with the arts, I (DR) and the MUS should be allowed into the bomb shelter.

Table 4. Formulaic Representation of the Entire Argument$_2$1

1. Interactional Level:

   a. F_1 by YP followed by

   b. $D{-}_2$ by MUS followed by

   c. $D{-}_3$ by CS followed by

   d. $D{-}_4$ by DR

2. Topic Level:

   a. $\{(F_1)F_2\}$ by YP followed by

   b. $\{D{-}_3D{-}_4)D{-}_5\}$ by MUS followed by

   c. $\{(D{-}_6)D{-}_7\}$ by CS followed by

   d. $\{(D{-}_8\ D{-}_9\ D{-}_{10})D{-}_{11}\}$ by DR

3. Sentence Level:

   a. $\{[f_1f_2][(f_3(f_4),f_5f_6,f_7(f_8))f_9]\}$ by YP followed by

   b. $\{[d{-}_{10}(f_{11})][f_{12}(d{-}_{13}),d{-}_{14}f_{15}f_{16}f_{17}\ f_{18}][d{-}_{19}]\}$ by MUS followed by

   c. $\{[d{+}_{20},d{-}_{21}(f_{22}(f_{23}))][(f_{24})d{-}_{25}]\}$ by CS followed by

   d. $\{[d{+}_{26},(f_{27})d{-}_{28}][(f_{29},d{+}_{30}(f31))d{-}32]\ [(f_{33})d{-}_{34}(f_{35}(f_{36}))]\ [d{-}_{37}]\}$ by DR

4. SUMMARY

There are several advantages to our analysis of argument$_2$ as a F/D-/D- sequence on three discourse levels. First, taking a generic characteristic approach reveals that argument$_2$ is an orderly discourse process. The coherence of argument$_2$ as a speech activity is based on the presence of the feature *opposition*, making any given argument$_2$ both a cohesive and distinctive event.

Second, it is now clear that there are four elements which drive the process of argument$_2$. These are the (1) the subjectivity of Fs, (2) the strict conditional relevance between Fs and Ds, (3) the generic feature *opposition* and (4) the presence of argument$_1$ in argument$_2$. The subjectivity of Fs makes argument$_2$ possible. Because a speaker may mean one thing by a F and a hearer may take that F to mean another thing, argument$_2$ is always a possiblity in discourse. The strict relevance between Formulations and Decisions provides for the occurrence of an F/D pair, and a minimal F/D/D sequence in argument$_2$. *Opposition* constrains Ds initially to the response-type of D-. And, finally, the presence of argument$_1$ in argument$_2$ is what makes any relationship between Fs as F/D pairs possible. Our analysis shows that Fs are linked together in a relationship of opposition or agreement by their argument$_1$ products. Argument$_1$, then, is the substantive basis of argument$_2$.

Thirdly, our approach to argument$_2$ reflects the interpretive search for illocutionary force in argument$_2$. Only three of the argument$_1$ products which function in the argument$_2$ we have analysed are explicit. All the others are implicit, and these implicit claims and arguments$_1$ are easily tracked by listeners. As the next speaker, a listener-become-speaker strategically responds to a selected number of these implicit claims and arguments$_1$, according to his or her own designs for the process of the argument$_2$.

The structure and (structural) process of argument$_2$ is then realized by the following *dynamics* of its process. We suggest that argument$_2$ initiation and resolution can be seen as a matter of *control* over F *comment slots*. A comment slot (Bilmes 1985) follows each F in an argument$_2$ into which a D by a subsequent speaker may be placed. Speakers, hearers and social norms all exercise control over comment slots, and so can influence the process of an argument$_2$ -- when and if it is to start, how it is to proceed, and if, when and how it is to be resolved.

As the person who will fill the slot, a listener (according to his or her own discourse designs) may fill the slot, either with a D- to initiate or complete uptake of an argument$_2$, or with a D+ when an argument$_2$ is supposed to be working towards resolution. A speaker can control the comment slot of his or her own F by *framing* it for a particular type of hearer response (that is, F, D-, D+, or no response). Such slot-framing can be achieved through various structuring techniques or structural devices. A structuring technique which frames a slot for a D+ is the entry of an argument$_3$ within a turn-at-talk, since, by digressing into Rhetorical argument, a speaker may state a case more fully for purposes of persuasion. Structural devices for D+ framing include device like the negative tag-question and or Canadian 'eh?' (Shahin 1990). Various social norms can also help to frame comment slots. For example, in the 'political discourse' which evokes socio-politically prescribed modes of talking (see Foucault 1972; Chilton 1985; Shapiro 1981), normative expectations will influence talk with implications of local, national or global proportion.

In sum, then, we have attempted to provide an ordered analysis of the structure and process of argument$_2$. We suggest that the approach presented here offers a promising basis for the future study of argumentative discourse.

NOTES

[1] An earlier version of this paper was presented at the Second International ISSA Conference on Argumentation (Amsterdam, June 22, 1990). The paper is based on Shahin (1989), *Opposition in the Discourse of Argument*, unpublished Master's thesis, University of Victoria.

[2] This example is taken from the play *The Mousetrap* by Agatha Christie. It is part of a larger argument$_2$ in which Mrs. Boyle criticizes the rooming house run by Mollie and her husband.

[3] O'Keefe and Benoit also state that "interactants can degrade or reject each other's self-identities" (p.162). Since self-identity is a type of belief, this manner of opposition is included in the statement that participants align themselves in differing ways toward some goal(s), act(s) or belief(s).

[4] The text of that argument$_2$ discourse is presented in Shahin (1989). We are grateful to J. B. Bavelas, Department of Psychology, University of Victoria, for permission to use this data.

[5] The deliberate ordering of discourse turns by the four participants in the first argument$_2$ (same-pair speakers not speaking consecutively) shows the participants' intuitive knowledge -- having been instructed to 'discuss' -- that *having* an argument is to produce a minimal F/D-/D- sequence. They attended to the interactional business at hand and had an argument$_2$ within the first three turns-at-talk.

[6] Kopperschmidt (1985) gives two categories of statement types, PRO and CONTRA. The D+ of a prefaced disagreement (e.g., d^{+}_{20} and d^{+}_{26} of our data) suggests a third category: CONTRA-PRO, or perhaps CAPIT (capitulation).

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THE EFFECT OF THE PATIENT'S SOCIAL CLASS ON THE DOCTOR'S DOMINEERINGNESS IN DOCTOR-PATIENT COMMUNICATION[1]

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1. INTRODUCTION

The influence of the patient's social class on doctor-patient communication was examined in two role-playing studies. In the first experiment liberal arts students played the roles of doctor and patient where one half of the patient's role was lower class and the other half, higher class. The second experiment was similar to the first but had pre-medical and nursing students play the role of doctor. The domineeringness of the doctor in the communication was examined as it related to the variation in the patient's social class.

Since at least classical times doctors have been concerned with effectively communicating with their patients. For example, Hippocrates believed that improper communication accounted for many, if not most, of the patients not carrying out the prescribed treatment (Levine, 1971). This was of special concern when the patient died because the blame was often mistakenly placed on the physician. Hippocrates further believed that the practitioners should speak briefly and authoritatively and not engage in idle conversation because it would detract from the conveyance of the god-like image. It is of interest for the present study that an examination of 42 reported case histories from doctors of the school of Cos (Hippocrates') gave no evidence that the slaves were treated any differently than the citizens of Cos.

Although the case histories from the school of Cos give no evidence for variation in treatment with social class, it is probable that variation occurs today (Scully, 1980). Fisher (1983) found that middle and upper class women with abnormal pap-smear test results were less likely to receive a hysterectomy than were lower class women whose pap tests showed the same degree of abnormality. Other studies (Fisher & Todd, 1986a, 1986b) have also shown that lower class women are likely to receive more radical treatment than higher class women.

Also, how much the physician tells the patient can vary with social class. Pendleton and Bochner's (1980) results show that the number of explanations offered by practitioners to patients from the working class was fewer than those offered to women from higher classes. Perhaps, it is the difference in the amount of information transmitted by the doctor or patient that produces

differences in treatment. After studying 336 videotapes of doctor-patient interactions, Waitzkin (1985) found that gender, social class, and income, among many other factors, contributed to the amount of information given by the doctor. However, the proportion of variation in the information transmitted which was accounted for by patient characteristics was small--9 to 14 percent. Some doctors have argued that the behaviours of the patients lead to differences in the information given to them (Glaser, 1958; MacDonald, Hagberg, & Grossman, 1963), and of course, doctor-patient interaction is a two-way process. The often-noted shyness of lower class patients may lead them to ask fewer questions leading to receiving less information than higher class patients (Waitzkin and Stoeckle, 1976). However, familiarity with medical terms and the ability to understand medical information does not appear to be related to social class (McIntosh, 1974; Waitzkin & Stoekle, 1976). It has been suggested (Kess & Hoppe, 1987) that physicians may want to use a structured plan in their discourse with patients to ensure that the essential information is transmitted and comprehended by patients in order for them to understand and choose the best course of treatment.

Fisher and Todd (1983) view the interaction of the doctor and patient within a broad social context where many social factors as well as the social structure of the medical institutions play a part in the communication process, the diagnosis, and the treatment. The doctor and patient engage in negotiations with the doctor presenting information for the patient to use to understand the nature of the problem, its treatment, and the consequences. The doctors also may use a persuasive strategy in order to gain acceptance for a recommended treatment. One aspect of the interaction is likely to be the degree of domineeringness of the doctors' behaviour because of their position of authority in the relationship. As Watzlawick, Beavin, and Jackson (1967) have pointed out every message contains an aspect of both content (in this case, information) and relationship, and within the relationship it is the domineeringness of the doctor and its possible variation with the social class of the patient that is the focus of the two studies to be reported here.

Domineering behaviour has been defined by Rogers-Millar and Millar (1977) as the use of "one-up messages--verbal statements which claim the right to be dominant." The doctor is dominant if the patient accepts the one-up messages, and the proportionately more domineering messages issued by the doctor, the more domineering the doctor is. Dominance, in contrast to domineeringness, is defined as the acceptance of the one-up messages. Therefore, the more accepting the patient is, the more dominant the doctor is in the relationship. It is likely that when doctors exhibit much domineering behaviour during an interaction, they are suggesting a paternalistic and dependent relationship. Dominance results from the complementary behaviour of the patient.

Domineeringness and social class were examined in two role-playing studies where the participants were undergraduate, female students who assumed the roles of doctors and patients where the socioeconomic status of the patient's role varied and domineering behaviour was operationalized according to Ericson and Rogers (1973) elaboration of Sluzki and Beavin's (1965) coding scheme for dyads. Basically, the scheme is a three-step procedure that examines the communication properties at the transactional level and is described in more detail in the method section of the first experiment. The hypothetical situation for the role-playing interaction was adapted from Fisher's (1983) study where the results of an abnormal pap-smear test are discussed between the doctor and patient, and they come to an agreement about the course of treatment.

2. Experiment 1

2.1 Method

Subjects. The subjects were 20 female students from the Department of Psychology's volunteer subject pool and from appeals for volunteers from posted notices and class solicitations. They were between 17 and 35 years of age.

Procedure. The subjects were asked to meet and role-play in pairs. One member of the pair, chosen at random, played the role of a doctor and the other the patient. When the subjects arrived at the laboratory, they were seated, and they read the role-playing instructions during which time the experimenter left briefly to adjust such things as the camera focus and the sound level of the videotape recording. After the subjects had enough time to read through their instructions, the experimenter rejoined them, orally went over the instructions, and answered questions. The experimenter then said to each in turn, "This is your doctor" and "This is your patient."

The doctor's role-playing instructions were as follows:

"Your patient is here today because the results of her last pap smear were abnormal. It was described as a Class 111, which means your patient has a 33 per cent chance of having cervical cancer.

Your responsibilities are:

(1) to protect the patient from more extensive disease (in this case, cancer).

(2) to preserve reproductive functions.

The three common courses of treatment are:

(1) Cryosurgery.
This is an office procedure which requires no aesthetic.
The cells are frozen.
Some follow-up treatment, involving regular monitoring of cell growth, is required to be sure there is no further abnormal growth.

The chance of successfully treating cancer, if present, is 20 percent.

(2) Cone biopsy.
This procedure requires anaesthetic. A thin, cone-shaped slice is cored out of the endocervical canal and is examined. If the cells at the top are normal, some follow-up is required to be sure there is no cancerous growth.
If the cells at the top are abnormal, a hysterectomy usually follows.
This procedure may threaten, but does not usually terminate reproductive capacity. The chance of successfully treating cancer, if present, is 35 per cent.

(3) Hysterectomy.
This is surgical removal of the uterus.
This procedure requires anaesthetic.
This procedure terminates reproductive capacity.
The chance of successfully treating cancer, if present, is 90 per cent.

Based on your extensive experience as a doctor you are likely to choose:
cryosurgery TWO times out of TEN,
cone biopsy THREE times out of TEN, and
hysterectomy FIVE times out of TEN."

Each "doctor" was given a fictional patient history. The two patient histories were distributed at random among the "doctors" and were as follows:

The first patient history:
"Single.
Age 28.
Three children.
Welfare recipient.
History of heart disease in family.
Father is diabetic--controlled with insulin injections.
Underwent tonsillectomy in June, 1981.
Physically fit--weight trains
Prone to bladder infection--investigated in November, 1983 found to be normal.
Experienced occasional minor depressive episodes--agreed that this may be related to diet."

The second patient history was identical to the first, except on three of the first four items, which were:

"Married
Age 28
One child
Works as a secondary school teacher."

The "patients'" instructions were considerably less elaborate than the "doctors":

"You are here to see the doctor because your last pap smear was abnormal. You need to decide what to do now, in terms of treatment. Your doctor has a lot of expertise and also knows a bit about your medical history and will draw on all of this information, expertise, and experience to help you make your decision."

The "patient" was also given her patient history in order to facilitate the role-playing.

The subjects sat facing each other, with a small table between them as they read through their instructions and played out the interaction. The subjects were told that they were being videotaped and that they needed to come to a treatment decision. Some suggestions were to try one treatment, a series of treatments, or to postpone their decision. The experimenter observed the interaction on a video screen in the control room.

Once the pair had arrived at their decision the experimenter returned to the subjects who were thanked and given an opportunity to view their videotape. After viewing the tape the experiment was explained to them. The subjects were then asked to sign a permission form indicating how they would allow the experimenter to use their tape.

2.2 Results

The videotapes were scored for domineeringness of those who played the role of doctor by coding the "doctors'" messages according to the relation coding scheme described by Ericson and Rogers (1973). First, each message was assigned a three-digit code which described the message. The first digit indicated the speaker and the second the message's speech act: (1) assertion, (2) question, (3) talk-over, (4) incomplete, (5) other. The third digit described the response form: (1) support, (2) nonsupport, (3) extension, (4) answer, (5) instruction, (6) order, (7) disconfirmation, (8) topic change, (9) initiation-termination, and (0) other.

The second step in the coding procedure was to translate the code into a control direction. A one-up message occurred when movement was made toward dominance, e.g., when an assertion occurred in the form of nonsupport (_12); a one-down message occurred when movement was made towards being controlled by, seeking, or accepting dominance of the other, e.g., if the message was an assertion expressing support for a previous message (_11); and a one-across message occurred when the movement sought neither to control nor to be controlled, e.g., when an assertion extended the dialogue (_13). For a complete explanation of these concepts and an example of how the scoring is done see Ericson and Rogers (1973) or Watzlawick, et al. (1967).

A ratio was formed of one-up statements to the total number

of statements made by each "doctor" for each role-playing interaction. A one-factor, two-level ANOVA was performed on these proportions to determine whether the "doctors' were more domineering when their "patients" were of a lower social class than of a professional class.

The hypothesis was rejected. The "doctors" whose "patients" were of lower class showed proportionately slightly more domineering behaviour ($\underline{M}$ = .40) than the "doctors" with higher class "patients" ($\underline{M}$ = .36), but the difference was not statistically significant.

Other differences were also not significant, such as the decisions of course of treatment, length of time the "doctors" spent with their "patients", and the rate of domineering statements per minute.

2.3 Discussion

Of course, there are many reasons for finding no significant differences, and with a role-playing experiment a likely reason is that the role-playing was not an accurate replica of real life. Perhaps, the subjects who played the doctors could not adequately do so, and/or the subjects playing the patient were middle class and may not have been able to adopt a role of another class. Then too, those who played both roles were female and perhaps differences only occur when the doctor is male and the patient is female. Also, Canadian medicine is less susceptible to social class effects than American medicine because Canada's medical plan does not discriminate according to socioeconomic status as does the American system. The findings of Fisher (1983) and some others mentioned earlier occurred within the American system. Therefore, within the Canadian system there may not be real differences in the medical communication process and treatment.

Nevertheless, the possibility of the same hypothesized differences was examined in a replication where the subjects who played the role of doctor were more closely related to the role than were those in the first experiment. An additional hypothesis was made: It was predicted that if there were the expected class differences in the domineeringness of the doctor, then there would also be class differences in the complementary behaviour of the patient, that is, the subjects playing the role of the patient from the lower class would be more accepting of the domineeringness than those playing the patient of the professional class. The differences in acceptance would indicate a greater dominance of the doctor as well as greater domineeringness when interacting with a patient from the lower class.

3. EXPERIMENT 2

3.1 Method

Subjects. The subjects were drawn from the Department of Psychology's subject pool and through appeals to undergraduate classes. Eleven pre-medical and bachelor of nursing students, who had the Registered Nurses degree, role-played doctors. It was hoped that they would be more familiar with the medical information and technical terms that doctors use in discussions with patients than those who played the doctor in the first experiment and thereby play the role more realistically. Twenty two students from the Department's pool played the patients. All 33 subjects were females between 19 and 40 years of age.

Procedure. The procedure differed somewhat from that of the first experiment. Each of the "doctors" interviewed two "patients"--one from each social class. The order of the "patient's" social class was counterbalanced to avoid order effects.

The subjects who played the roles of doctor and the first patient read the same role-playing instructions and patient histories as were used in Experiment 1 but in separate rooms. Then, each was given an opportunity to ask questions, individually. The "doctor" donned a white laboratory jacket and the "patient" a hospital examining gown over their clothing. The experimenter then brought the "patient" into the laboratory room with the "doctor." Subjects were introduced by the experimenter saying: "Doctor (her name) your patient, (her name), is here."

The subjects discussed the treatments, etc., as in the first experiment. During the videotaping of the interaction, the second patient was given her role-playing instructions and patient history to read. Following a treatment decision and the conclusion of the interaction, the patient was taken out of the laboratory room. The doctor was then given the second patient's history. The experimenter separately asked if the second patient or doctor had any questions. The second patient was then seated in the laboratory and introduced to the doctor in the same manner as the first interaction.

During the videotaping of the second interview, the experimenter gave the first patient the option of receiving a written explanation of the experiment, and view the videotape at a later date, or waiting to see the videotape after the second interaction. All subjects chose to see the video immediately after the second interaction.

After the second interaction, the three subjects were shown the videotape, and given a verbal explanation of the study. The subjects were then asked to fill out a permission form indicating how they would allow the videotape to be used.

3.2 Results

Using the same scoring procedure as in the first study, the videotapes were scored for domineering behaviour exhibited by the

doctor. To test for an order effect a comparison was made of the proportions ($\underline{M}$ = .28) of domineering messages given to the first patient with those ($\underline{M}$ = .31) given to the second patient. A repeated measures ANOVA indicated no significant order effects in the domineering messages that the "doctors" gave during the interactions.

A second comparison was made to test the hypothesis that the proportion of domineering messages given by the "doctor" was related to the socioeconomic status of the "patient." Results of a repeated measures ANOVA supported the hypothesis by showing that the proportions ($\underline{M}$ = .33) of one-up messages given to the lower social class "patients" were significantly greater than the proportions ($\underline{M}$ = .26) given the higher class "patients", $\underline{F}(1, 10) = 9.82$, $\underline{p} < .025$. Thus, the findings indicate that the patient's socioeconomic status affects the number of domineering messages given during an interaction by a doctor.

According to Fisher (1983) and Fisher and Todd (1986a, 1986b) the treatment decision made during the interaction should depend on the patients' social class, in that those patients of lower status should receive more radical treatments. The results of an ANOVA showed no significant differences in the treatment decisions made for patients of the two classes.

In order to better understand the nature of domineering behaviour, comparisons were also conducted on the number of one-down messages the "patients" gave during the interactions. Generally, the proportions ($\underline{M}$ = .76) of one-down messages made by "patients" were significantly greater than the proportions ($\underline{M}$ = .13) of one-up messages, $\underline{F}(1, 21) = 122.26$, $\underline{p} < .01$. However, an ANOVA revealed no significant differences between the social classes in the proportions of one-down messages that were given. This finding may be due to a floor effect in that the patients gave few messages during the interviews, and those they did give were typically one-down messages.

4. GENERAL DISCUSSION AND CONCLUSIONS

Generally, the women who played the role of doctor in the second experiment were significantly more domineering when interacting with women who played the role of lower class patients than with those who played professional class patients. The finding is consistent with previous studies which have found that patient attributes influence doctor-patient interactions (Blum, 1960; Fisher, 1983; Garrity, Wilson, & Hafferty, 1984; Pendleton, & Bochner, 1980; Waitzkin, & Stoeckle, 1976), and it suggests that the stereotypes which doctors may have can influence their behaviour during the interaction with patients.

If the differences in the doctors' behaviour and problems during interactions were, as some doctors postulate, due mainly to the patients' behaviour, then the results of the second experiment can not be easily explained. The subjects who were

assigned to the patients' roles of the two social classes did not differ significantly in their communicative behaviour during the interactions. A large proportion of the patients' messages in both classes were one-down messages. Therefore, while the behaviour of a patient undoubtedly influences that of the doctor, it can not be argued that it was the patients' behaviour which induced the doctors' communicative messages in this study. Thus, knowledge of a patient's social class appears to affect the role playing of a doctor's communicative behaviour, regardless of the other characteristics of the patient.

Contrary to Fisher (1983) and Fisher and Todd (1986a, 1986b) the results of both experiments did not show any significant differences in the treatment decisions reached between patients of different classes. Instead, treatment decisions tended to be the same for patients who interacted with the same doctor. Since Fisher and Todd were focusing on the mutual influence of social structure and individual characteristics, the overriding social structure may have been a major cause of the differences in treatment decisions which were found in their studies. For example, the doctors dealing with patients of the lower social class were in need of surgical experience, whereas the doctors dealing with patients of the higher class were not. This could account for the lower class patients being more likely to receive hysterectomies. However, it should be pointed out that it is still likely, that the domineeringness of the doctors in need of surgical experience influenced the "mutual" decisions on the course of treatment.

While the use of students to role-play doctors and patients can be criticized, it does not invalidate the results of the present studies. Indeed, the use of role playing should, if anything, have increased the difficulty of finding a significant difference in the number of domineering messages given by doctors to patients. Given the esoteric nature of the doctor's medical knowledge, it is likely that the use of domineering messages and the asymmetry in the interactions would increase in actual doctor-patient interactions.

It is interesting to note that although the usual findings that social class influenced the doctors' communications, they were, typically, perhaps even exclusively, with male doctors. The present studies using females in the doctor's role suggest that the gender of the doctor is probably not a major factor contributing to the discrimination by physicians.

In sum, the current studies illustrate that knowledge of the patient's social class affects the relationship definition offered by the doctor to the patient, as measured by the doctor's domineering behaviour and that the domineeringness is not a result of the patient's communicative behaviour.

NOTE

1. This report is based on Linda Coates' (1989) and Anita Hanks' (1988) honours theses, Department of Psychology, University of Victoria.

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PASSIVE CONSTRUCTIONS IN JAPANESE
- A LEXICAL APPROACH IN HPSG -

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1. INTRODUCTION

The passive construction has been a focus of attention in many linguistic studies both in English and in Japanese. In the main trend of Generative Transformational Grammar of 1960's and early 70's, the English passive sentences were derived from their active counterparts through a series of transformations collectively called "passivization" (Chomsky (1957, 1965)). The passive has also been treated in terms of the change of grammatical functions among NPs. This approach is represented by Relational Grammar (Perlmutter (1984), Perlmutter and Postal (1983), Johnson (1977)). Since 1980's there seems to be a trend that moves toward a lexical analysis of the passive rather than a syntactic one. In the current Government-Binding Theory, this derivation is ascribed to a Move-α stimulated by three major principles: θ-criterion, Case Theory, and Binding Theory (Chomsky (1981), Jaeggli (1986)). This approach assumes a lexical operation that changes the verb form from base to the passive participle, absorbing the case-assigning property of the original verb.[1] The idea of Relational Grammar is incorporated in Bresnan's Lexical Functional Grammar (LFG). In LFG, the passive operation is conducted by a lexical rule that turns the the object of the active form into the subject, and either assigns the original subject to the null function or to an Oblique Agent phrase (Kaplan and Bresnan (1982), Sells (1985)). Among phrase structure grammars, GPSG postulates Passive Metarule to syntactically analyze the passive structures (Gazdar et al. (1985)), while HPSG has opted for a lexical approach, positing the passive lexical rule (Pollard and Sag (1987)).

An exactly parallel trend can be found in Japanese linguistics; i.e., from syntactic (transformational) to lexical approach (for the syntactic approaches, see Kuroda (1978), Kuno (1973), Inoue (1976) etc.; for the lexical approaches, see Farmer (1980, 1984), Hasegawa (1981a,b), Miyagawa (1989), etc.). But the Japanese passive construction is characterized by several interesting properties that find no counterpart in the English passive, passivization of intransitive verbs being the most prominent one among them. The Japanese passive has naturally called for different approaches from the ones proposed for the English passive.

The purpose of this paper is to propose a new lexical approach to the Japanese passive construction in the framework of HPSG. On the way, I will modify several parts of HPSG so that it can accommodate the Japanese language. Ultimately I will propose one type of lexical rule that covers not only (one type of) the passive structure but also the causative,

the benefactive, and (one type of) the topic construction in Japanese. This paper is organized in the following way: Section 2 will give a brief sketch of the passive structure in Japanese. In Section 3, I will present my proposal, which will also include a new approach to the topic construction. Section 4 is an attempt to extend my proposal seeking the parallelism between the passive structure and other derived structures.

2. A SKETCH OF THE PASSIVE IN JAPANESE

Japanese has two types of passives, variously called "direct" vs. "indirect", "pure" vs. "adversitive", "transitive" vs. "intransitive", etc. (cf. Kuno (1973), Inoue (1976), Gunji (1987)). Both types of these passives are formed by passive morpheme (r)are attached to the verb stem. The direct passive is analogous to the English passive in that it has a functionally equivalent active counterpart which always involves a transitive verb phrase (henceforth TVP). Besides, the original object corresponds to the subject of the passivized sentence, and that the original subject is deprived of the subjecthood; the agentive phrase is marked by [ni] which usually signals the indirect object or the dative case. The indirect passive is unique in not having the active counterpart. The indirect passive can be formed not only from a TVP but also from an intransitive verb phrase (henceforth VP) attached by the passive morpheme (r)are. The indirect passive is characterized by special semantic overtones as well. That is, it often carries the connotation that the subject is adversely affected in a certain sense by the action designated by the rest of the sentence.[2] The following are some examples of these two types of passive sentences ((1)= the direct passive; (2)= the indirect passive):

(1) Naoko ga sensei ni sikar-are-ta.
NOM teacher DAT sold-PASS-PAST
'Naoko was scolded by the teacher.'

(2) a. Naoko ga kodomo ni nak-are-ta.
NOM child DAT cry-PASS-PAST
'Naoko was adversely affected by the child's crying.'

b. Naoko ga kodomo ni kabin wo war-are-ta.
NOM child DAT vase ACC break-PASS-PAST
'Naoko was adversely affected by the child's breaking the vase.'

The direct passive and the indirect passive also show a different behaviour with respect to the binding of reflexive zibun. It has been pointed out that the binder of zibun must be a subject of some sort (Shibatani (1977), Farmer (1984), Hasegawa (1981a,b)).[3] When zibun is involved in the direct passive, the derived subject can bind the reflexive while the original subject (i.e. the subject of the active sentence) cannot bind it. However, the indirect passive allows both the original subject and the derived subject to bind the reflexive, resulting in ambiguity:

(3) Mary$_i$ ga sensei$_j$ ni zibun$_{i/*j}$ no ie de sikar-are-ta.
NOM teacher DAT self GEN house in scold-PAS-PAST
'Mary$_i$ was scolded by the teacher in her$_i$ own house.'
cf. Sensei$_j$ ga Mary$_i$ wo zibun$_{*i/j}$ no ie de sikat-ta.
'The teacher$_j$ scolded Mary in his$_j$ own house.'
(4) Mary$_i$ ga sensei$_j$ ni musuko wo zibun$_{i/j}$ no
NOM teacher DAT son ACC self GEN
ie de sikar-are-ta.
house in scold-PASS-PAST
'Mary$_i$ was affected by the teacher's$_j$ scolding her son in her$_i$/his$_j$ house.'

These peculiarities have prompted divergent analyses of the passive, some of which are quite different from those of English.[4]

3. A NEW APPROACH TO THE PASSIVE IN JAPANESE

In this section I will propose a new lexical approach to the Japanese passive. The framework of the analysis is basically HPSG, with several modifications made to accommodate the syntactic peculiarities of Japanese. In particular, major changes will be made in SUBCAT.

The idea of obliqueness hierarchy basically assumes that the surface word order directly reflects the GFs (SUBJ, OBJ, etc.) and the GCs (NOM, ACC, DAT, etc.) (cf. Keenan and Comrie (1977), Pollard and Sag (1987)). However, I will separate all these three: obliqueness, GF, and GC. I assume that both GFs and GCs are determined by the arguments' position in the SUBCAT list. The following is the tentative set of normal GF assignment rules and of normal GC assignment rules, both of which apply before the application of a lexical rule:

(5) **Normal GF Assignment Rules**:
a. Assign SUBJ to the rightmost NP.
b. Assign OBJ1 to the second NP from the right.
c. Assign OBJ2 to the leftmost NP.

(6) **Normal GC Assignment Rules**:[5]
a. Assign NOM(GA) to the rightmost NP.[6]
b. Assign ACC(WO) to the second NP.
c. Assign DAT(NI) to any other NP.

Some lexical rules change the GF, while others do not. GC assignment virtually changes the arguments from NPs to PPs, without a substantial semantic change (cf. Gunji (1983,

1987).) Once appropriate GCs are assigned, NPs can be permuted relatively freely, because they already have the syntactic information encoded.

3.1. Topic Lexical Rules

Before presenting my analysis of the passive, a discussion of the topic structure of Japanese is in order.[7] "Topic" has been one of the most controversial concepts in the Japanese language. It is generally considered to be an NP (or the function associated with the NP) marked by the case marker [wa]. The following are some examples of the topic structure:

(7) a. Taroo wa tuma ga Kyoto ni it-ta.
TOP wife NOM to go-PAST
'As for Taroo, his wife went to Kyoto.'

b. Taroo wa Kyoto ni it-ta.
TOP to go-PAST
'As for Taroo, he went to Kyoto.'

c. Naoko wa Hirosi ga hana wo okut-ta.
TOP NOM flower ACC send-PAST
'As for Naoko, Hirosi sent her flowers.'

d. Naoko wa Hirosi ga but-ta.
TOP NOM hit-PAST
'As for Naoko, Hirosi hit her.'

e. Tokyo wa Hirosi ga umare-ta.
TOP NOM be-born-PAST
'As for Tokyo, Hirosi was born there.'

It has been generally assumed that there are two types of topic structures in Japanese: one in which Topic corresponds to a certain argument or adjunct missing from the rest of the sentence (cf. (7-b, c, d, e) above), and the other in which the rest of the sentence cannot incorporate Topic (cf. (7-a)) (See Inoue (1976), Kuno (1973), Gunji (1987), etc.). In the former case, Topic is explained in terms of the unbounded dependencies with such notions as "Topic Fronting", "Movement to COMP", or "SLASH"; in the latter, Topic is usually considered as an extra phrase which is to be related to the rest of the sentence via a certain kind of pragmatic inference (cf. Kitagawa (1982), Farmer (1984)). In this case, Topic has not been associated with the subcategorization, because of its pragmatic character.[8]

For the reasons that I will show below, I propose to classify Topic in three ways, rather than two, depending on the structure.

1. Adjunct Topic: preposed and marked by [wa] (cf. (7-e))

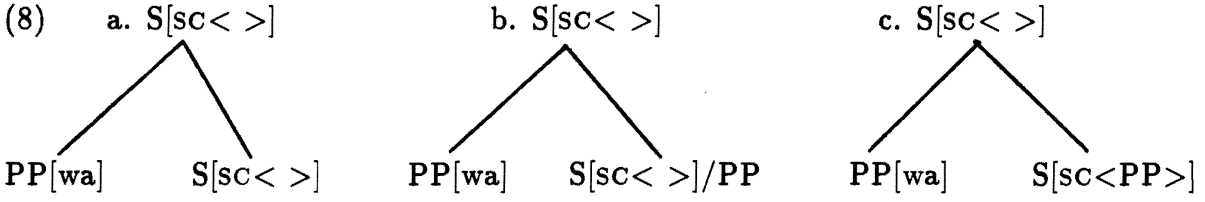
2. Extracted Topic: corresponds to an argument gap; extracted and marked by [wa]

(except for SUBJ) (cf. (7-c, d))

3. Base Topic: rightmost argument in the SUBCAT list; marked by [wa] in the list (cf. (7-a, b))

Below are their respective local trees:

(8)



Adjunct Topic is the preposed adjunct marked by [wa].[9] Being an adjunct, it has no corresponding gap, and the rest of the sentence is "complete." Extracted Topic is the preposed NP linked to a gap in the rest of the sentence via SLASH feature. Note that these two types of Topic have a saturated mother S and a saturated sister S. I assume that these two cases have [wa] assignment take place in syntax; that is, these Topics are marked by [wa] by virtue of its structure (either (8-a) or (8-b).) Base Topic is, on the other hand, a subcategorized Topic; the topic case ([wa]) of this type is assigned to the rightmost argument in the SUBCAT list. Obviously this makes a "topicalized subject" a Base Topic; however, a subject NP is not the only source of Base Topic. I claim that Topic of the type (7-a) (i.e. Topic without a corresponding argument or adjunct) is also Base Topic. To make this point I assume a lexical rule "Topic Introduction Lexical Rule" or (TILR) that derives a SUBCAT list with an additional argument at the right end. I will term this additional argument and its GF as "XARG":

(9) **Topic Introduction Lexical Rule (TILR)**

$$_{base}\begin{bmatrix} \text{PHON } \boxed{1} \\ \text{SYN} \mid \text{LOC} \mid \text{SUBCAT } \langle \ldots, [\ ]_{\boxed{2}}, \rangle \\ \text{SEM} \mid \text{CONT } \boxed{3} \end{bmatrix} \mapsto$$

$$_{topicalized}\begin{bmatrix} \text{PHON } \boxed{1} \\ \text{SYN} \mid \text{LOC} \mid \text{SUBCAT } \langle \ldots, [\ ]_{\boxed{2}}, [\text{XARG}]_{\boxed{4}} \rangle \\ \text{SEM} \mid \text{CONT } \boxed{3} \end{bmatrix}$$

Crucially, this lexical rule introduces a "new" argument. The XARG cannot originate either in (the original) SUBCAT list or in the ADJUNCTS;[10] there must be a separate possible (not necessarily realized) subject or PP[ga], and the XARG cannot be marked by any other postposition than [wa]. This XARG subsequently gets GC Topic or [wa] by Topic Case Assignment Rule. It is important to note that TILR does not affect the

original GFs of the arguments assigned by (5); SUBJ remains SUBJ, and OBJ remains OBJ. TILR only adds one more argument in the SUBCAT list.

This approach to Topic finds support in the argument of zibun-binding. As mentioned earlier, it has been assumed that reflexivization can be triggered only by a subject of some sort. Obviously, however, Topic of the types in (7-a) and (7-b) can bind the reflexive. The generalization is that:

> Topic can bind the reflexive zibun iff
>
> either it corresponds to the subject
>
> or it has no correspondent in the original (untopicalized) sentence.

This generalization would be very difficult to capture without the approach that I am proposing. There seems to be little in common between a subject PP and a PP disconnected from any grammatical function. The three-way classification of Topic based on the Topic Lexical Rules that I am proposing in this section can capture this asymmetry of Topic in a straightforward way; it simply necessitates the stipulation that Base Topic, besides a subject, can bind a reflexive.

3.2. A New Approach to the Passive: A Proposal

Now let me turn back to the passive structure in Japanese. I will posit the following two lexical rules and one GC re-assigning rule to accommodate the direct and indirect passive:

(10) **Direct Passive Lexical Rule (PLR 1)**

$$_{base \wedge trans}\left[\begin{array}{l}\text{PHON } \boxed{1} \\ \text{SYN} \mid \text{LOC} \mid \text{SUBCAT } \langle \ldots, [\ ]_{\boxed{2}}, \ldots, [\ ]_{\boxed{3}} \rangle \\ \text{SEM} \mid \text{CONT } \boxed{4}\end{array}\right] \mapsto$$

$$_{passive}\left[\begin{array}{l}\text{PHON } f_{PASS}\,(rare, \boxed{1}) \\ \text{SYN} \mid \text{LOC} \mid \text{SUBCAT } \langle \ldots, [\text{OBJ2}]_{\boxed{3}}, [\text{SUBJ}]_{\boxed{2}} \rangle \\ \text{SEM} \mid \text{CONT } \boxed{4}\end{array}\right]$$

(11) **Indirect Passive Lexical Rule (PLR 2)**[11]

$$_{base}\begin{bmatrix} \text{PHON } \boxed{1} \\ \text{SYN} \mid \text{LOC} \mid \text{SUBCAT } \langle \ldots, [\ ]_{\boxed{2}}, \rangle \\ \text{SEM} \mid \text{CONT} \begin{bmatrix} \text{RELN} & \boxed{4} \\ \text{AGENT} & \boxed{2} \\ \vdots & \end{bmatrix} \end{bmatrix} \mapsto$$

$$_{passive}\begin{bmatrix} \text{PHON } f_{PASS}\,(\textit{rare}, \boxed{1}) \\ \text{SYN} \mid \text{LOC} \mid \text{SUBCAT } \langle \ldots, [\ ]_{\boxed{2}}, [\text{XARG}]_{\boxed{3}} \rangle \\ \text{SEM} \mid \text{CONT} \begin{bmatrix} \text{RELN} & \text{EXPERIENCE}(\boxed{4}) \\ \text{EXPERIENCER} & \boxed{3} \\ \text{AGENT} & \boxed{2} \\ \vdots & \end{bmatrix} \end{bmatrix}$$

(12) **GC Reassignment Rules**: obligatory after (10) or (11)

a. Assign NOM(GA) to the rightmost NP.
b. Assign DAT(NI) to the second NP from the right.
c. Maintain the GCs originally assigned to the other NPs.

PLR 1 is a direct counterpart of the English passive lexical rule in HPSG (Pollard and Sag (1987)). It permutes the order of arguments in the SUBCAT list; non-SUBJ argument (i.e. an argument not in the rightmost position) is moved to the rightmost position, and the SUBJ is moved to the second position from the right. I assume that this rule changes the original GF of the arguments, making the new rightmost argument the new SUBJ, and the second argument the OBJ2. Subsequently the GC re-assignment rule (12) applies marking the rightmost NP with [ga] and the second NP with [ni].

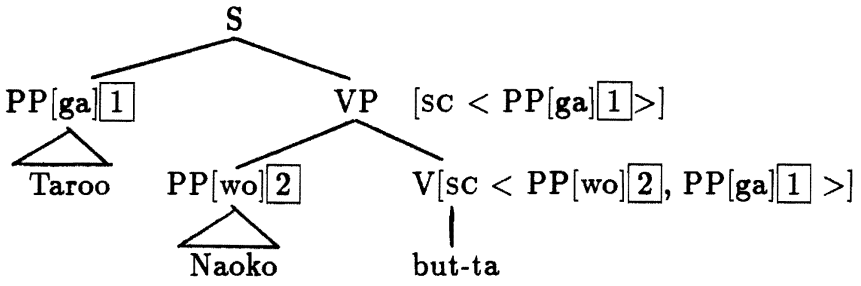
PLR 2 is the rule for the indirect passive, which is unique to Japanese. This rule adds a new argument at the right end of the list, which is to be linked to the Experiencer in SEM. The order of the rest of the arguments is preserved, and I assume that GFs are not affected. GC re-assignment rule (12), however, applies, changing the original GCs; the newly introduced (rightmost) argument will receive [ga], and the SUBJ argument will be marked by [ni] rather than [ga]. One of the crucial differences between PLR 1 and PLR 2 is, then, that the former changes the original GF while the latter does not.

The following are the examples of the active vs. passive sentence pairs with the structures proposed here.[12]

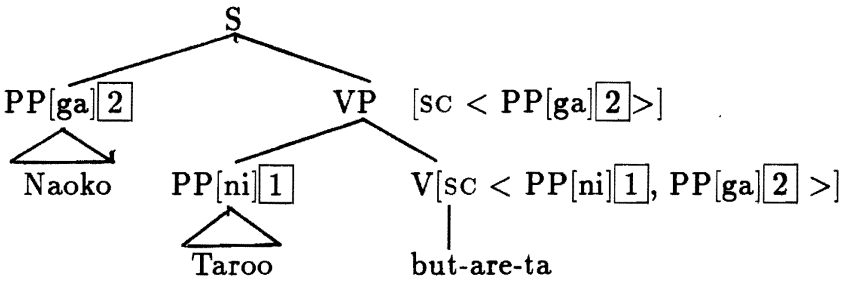
(13) a. Taroo ga Naoko wo but-ta.
NOM ACC hit-PAST
'Taroo hit Naoko.'

b. Naoko ga Taroo ni but-are-ta.
NOM DAT hit-PASS-PAST
'Naoko was hit by Taroo.'

(a)



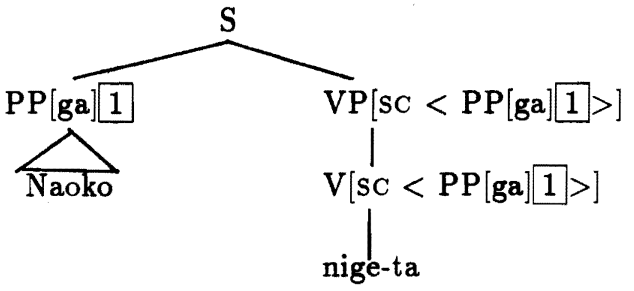
(b)



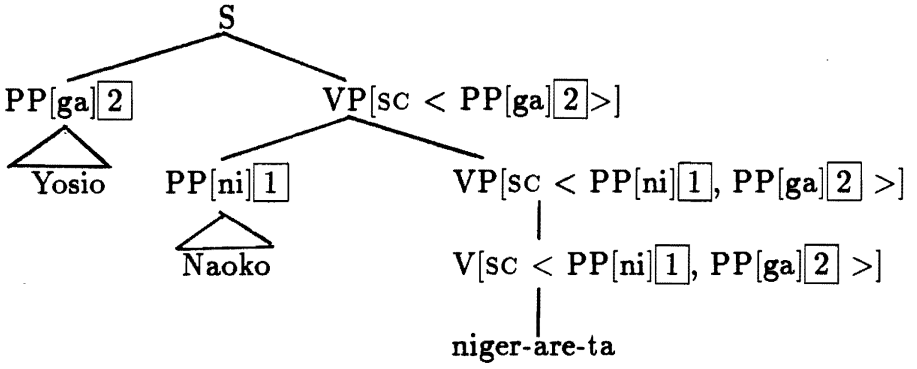
(14) a. Naoko ga nige-ta.
NOM escape-PAST
'Naoko got away.'

b. Yosio ga Naoko ni niger-are-ta.
NOM DAT escape-PASS-PAST
'Yosio was adversely affected by Naoko's getting away.'

(a)



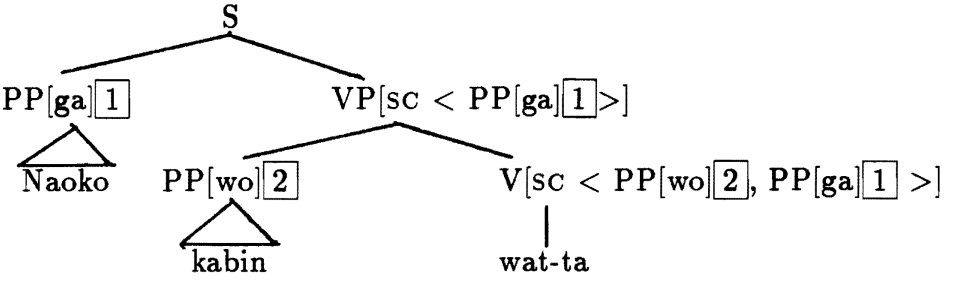
(b)



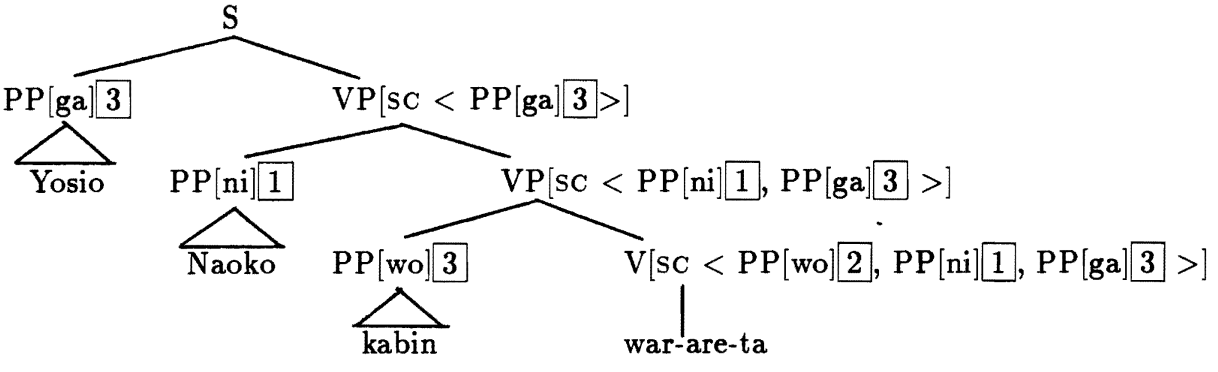
(15) a. Naoko ga kabin wo wat-ta.
NOM vase ACC break-PAST
'Naoko broke the vase.'

b. Yosio ga Naoko ni kabin wo war-are-ta.
NOM DAT vase ACC break-PASS-PAST
'Yosio was adversely affected by Naoko's breaking the vase.'

(a)



(b)



Basic changes that the lexical rules (PLR 1 and PLR 2) make in the SUBCAT list of the verbs involved in the examples above can be summarized in the following way:

(13-a) SC < PP[wo]$\boxed{2}$, PP[ga]$\boxed{1}$ > $\mapsto$ (PLR 1 + (12))

(b) SC < PP[ni]$\boxed{1}$, PP[ga]$\boxed{2}$ >

(14-a) SC < PP[ga]$\boxed{1}$ > $\mapsto$ (PLR 2 + (12))

(b) SC < PP[ni]$\boxed{1}$, PP[ga]$\boxed{2}$ >

(15-a) SC < PP[wo]$\boxed{2}$, PP[ga]$\boxed{1}$ > $\mapsto$ (PLR 2 + (12))

(b) SC < PP[wo]$\boxed{2}$, PP[ni]$\boxed{1}$, PP[ga]$\boxed{3}$ >

Note that PLR 2 has a crucial similarity to TILR. That is, both lexical rules introduce a new argument (XARG) at the right end of the SUBCAT list without affecting the original GFs. My point is that these two rules are subsumed by one class of rules that I will term as "SUBCAT Extension Lexical Rule." The motivation of this analysis again comes from the consideration of zibun-binding.

As I mentioned in section 2, the agentive phrase or PP[ni] can bind a reflexive only in the indirect passive, but not in the direct passive. This asymmetry has long been a topic of discussion, prompting two opposing positions: uniform approaches and non-uniform approaches (cf. Hasegawa (1981a,b), Ishikawa (1985), Gunji (1987), Miyagawa (1989), etc.). However, recall that Topic construction can have a similar reference pattern as the indirect passive. To be more precise, those Base Topics that have undergone TILR show the referential ambiguity between PP[wa] and PP[ga]. See the following examples:

(16) a. Naoko$_i$ wa koibito$_j$ ga zibun$_{i/j}$ no ie de zisatu-s-ita.
TOP B. F. NOM self GEN house at suicide-do-PAST
'As for Naoko, her boyfriend committed suicide in her/his house.'

b. Naoko$_i$ wa musuko$_j$ ga zibun$_{i/j}$ no syasin wo tot-ta.
TOP son NOM self GEN photos ACC take-PAST
'As for Naoko, her son took his/her pictures.'

If we assume the idea of "SUBCAT Extension Lexical Rule", the generalization is readily apparent:

(17) Zibun controller is either
a PP associated with the GF [SUBJ] or
a PP that occupies the rightmost position in the SUBCAT list.

Given this generalization, the asymmetry between the direct and the indirect passive finds a straightforward account. The original subject in the direct passive cannot bind a reflexive any more, because PLR 1 which is not a SUBCAT Extension Lexical Rule does change the GFs, depriving the original subject (agentive phrase realized as PP[ni].) of the subjecthood. The binder is unambiguously the derived subject PP[ga]; in fact, this single PP, and nothing else, satisfies both of the disjunctive clauses in (17). The other two cases, Base Topic and the indirect passive, both involve SUBCAT Extension Lexical Rule. Since this type of rules preserves the original GFs and introduces a new argument at the right end of the list, it ends up with two separate PPs that satisfy each of the clauses in (17) respectively; the consequence is the ambiguity. Thus the idea of SUBCAT Extension Lexical Rule enables us to give a simple unified account of the problem of zibun-binding in Topic construction and in the indirect passive.

Before concluding this section, let me comment on the uniform vs. non-uniform approaches to the passive. The present analysis may seem to be a non-uniform analysis because it posits two different lexical rules. It is still quite possible, however, to capture the commonness or the "passive-hood" in these two rules. First, passivization is basically a process that changes the position of arguments in a SUBCAT list in such a way as to put a new PP in the rightmost position. The difference is only the source of the PP; that is, either from a different position in the same SUBCAT list (= the direct passive) or from nowhere (= the indirect passive). Second, as a consequence of this rearrangement, the original SUBJ no longer receives a nominative case [ga] when the GC re-assignment rule (12) has applied; the new rightmost NP gets the case instead. In view of these properties, the direct passive and the indirect passive are almost identical processes except for the origin of the new PP[ga].

4. NI-CAUSATIVE AND BENEFACTIVE

In this section I will compare the passive structure with other derived structures in Japanese and argue about their similarities, giving some tentative lexical rules for them. It is generally assumed that the passive, the causative, and the benefactive are structurally very similar (cf. Inoue (1976), Hasegawa (1981a), Gunji (1987) among others). They all involve the complex verbs consisting of a verb stem attached by a morpheme ((r)are, (s)ase, or (i)temorau) that determines the property of the complex verbs, either passive, causative, or benefactive. Besides, in all of these structures, the "non-subject" or non-nominative argument is the agent of the main action; the nominative argument is not directly involved in the action itself, but is in some non-agentive relation to the action (either as the adversely affected, as the causer, or as the benefitted). In the Transformational Grammar of the 1970's, all of these structures were derived from complex (i.e. multi-clause) structures

through a series of transformations such as Raising, S-Pruning, Equi-NP Deletion, etc. And in these underlying structures, the agentive argument was the subject of the embedded S (cf. Inoue (1976), Kuno (1973), Kuroda (1978) among others).

Japanese causativization is characterized by the causative morpheme (s)ase, which is attached to a verb stem. The causer is marked by [ga], and the causee, which corresponds to the agent of the action to be caused, is marked by either [wo] or [ni].[13] The following are some examples of the causative sentences:

(18) a. Naoko ga deteiku.
NOM go away
'Naoko goes away.'

b. Taroo ga Naoko ni/wo deteik-ase-ta.
NOM DAT/ACC go-away-CAUS-PAST
'Taroo let/made Naoko go away.'

(19) a. Naoko ga musuko wo homeru.
NOM son ACC praise
'Naoko congratulates her son.'

b. Taroo ga Naoko ni/*wo musuko wo home-sase-ta.
NOM DAT/*ACC son ACC praise-CAUS-PAST
'Taroo let/made Naoko congratulate her son.

The benefactive sentence is characterized by the semantic overtone that the action involved benefitted the subject in some way. Structurally, it is very close to the NI-causative and the passive. It is formed by benefactive morpheme (i)temorau that attaches to a verb stem, and the agent of the embedded (beneficient) action is marked by [ni], instead of [ga]; the PP marked by [ga] is the beneficiary. This overtone of "benefit" is quite contrastive with the overtone of "adversity" associated with the indirect passive. The beneficiary, or PP[ga], may be actively involved in realizing the action, i.e. by asking the favor, but it is not necessarily the case. It can be benefitted by chance or by the agent's voluntary action.

(20) a. Naoko ga deteiku.
NOM go away
'Naoko went away.'

b. Taroo ga Naoko ni deteit-temorat-ta.
NOM DAT go-away-BENE-PAST
'Taroo benefitted from Naoko's having gone away.'

(21) a. Ozi ga isan wo nokosu.
uncle NOM heritage ACC leave
'The uncle leaves a fortune.'

b. Naoko ga ozi ni isan wo nokos-itemorat-ta.
NOM uncle DAT heritage ACC leave-BENE-PAST
'Naoko benefitted from her uncle's leaving her a fortune.'

I claim that the NI-causative and the benefactive are derived in essentially the same way as the indirect passive; their derivation is basically a lexical process. The rule involved is a SUBCAT Extension Lexical Rule followed by the GC re-assignment rule (12). That is, it introduces a new argument in the right end of the SUBCAT list, preserving the original arrangement of GFs. The difference among these three constructions resides mainly in the semantic roles of the arguments involved.

The followings are the tentative lexical rules for the NI-causative and the benefactive:

(22) **NI-Causative Lexical Rule (NCLR)**

$$\textit{base}\begin{bmatrix} \text{PHON } \boxed{1} \\ \text{SYN} \mid \text{LOC} \mid \text{SUBCAT } \langle \ldots, [\ ]_{\boxed{2}}, \rangle \\ \text{SEM} \mid \text{CONT} \begin{bmatrix} \text{RELN} & \boxed{4} \\ \text{AGENT} & \boxed{2} \\ \vdots & \end{bmatrix} \end{bmatrix} \mapsto$$

$$\textit{causative}\begin{bmatrix} \text{PHON } f_{CAUS}\,(\textit{sase}, \boxed{1}) \\ \text{SYN} \mid \text{LOC} \mid \text{SUBCAT } \langle \ldots, [\ ]_{\boxed{2}}, [\text{XARG}]_{\boxed{3}} \rangle \\ \text{SEM} \mid \text{CONT} \begin{bmatrix} \text{RELN} & \text{CAUSE}(\boxed{4}) \\ \text{CAUSER} & \boxed{3} \\ \text{CAUSEE-AGENT} & \boxed{2} \\ \vdots & \end{bmatrix} \end{bmatrix}$$

CONDITION: This rule must be followed by GC Reassignment Rules (12).

(23) Benefactive Lexical Rule (BNLR)

$$
\textit{base}\begin{bmatrix} \text{PHON } \boxed{1} \\ \text{SYN} \mid \text{LOC} \mid \text{SUBCAT } \langle \ldots, [\ ]_{\boxed{2}}, \rangle \\ \text{SEM} \mid \text{CONT} \begin{bmatrix} \text{RELN} & \boxed{4} \\ \text{AGENT} & \boxed{2} \\ \vdots & \end{bmatrix} \end{bmatrix} \mapsto
$$

$$
\textit{benefactive}\begin{bmatrix} \text{PHON } f_{BENE}\ (\textit{temorau}, \boxed{1}) \\ \text{SYN} \mid \text{LOC} \mid \text{SUBCAT } \langle \ldots, [\ ]_{\boxed{2}}, [\text{XARG}]_{\boxed{3}} \rangle \\ \text{SEM} \mid \text{CONT} \begin{bmatrix} \text{RELN} & \text{BENE}(\boxed{4}) \\ \text{BENEFICIARY} & \boxed{3} \\ \text{BENEFACTOR} & \boxed{2} \\ \vdots & \end{bmatrix} \end{bmatrix}
$$

CONDITION: This rule must be followed by GC Reassignment Rules (12).

An argument involving the reflexive serves to further prove the structural similarity among the indirect passive, the NI-causative, and the benefactive. That is, as in the indirect passive, the NI-causative and the benefactive allow both the PP[ga] and the PP[ni] to bind the reflexive zibun, resulting in ambiguity. See the following examples:

(24) a.* Kyoko$_i$ ga Yosio$_j$ ni zibun$_{i/j}$ no kuruma de
NOM DAT self GEN by car
Amerika e ik-are-ta.
to America go-PASS-PAST
'Kyoko was adversely affected by Yosio's going to the U. S. by her/his car.'

b. Kyoko$_i$ ga Yosio$_j$ ni zibun$_{i/j}$ no kuruma de
NOM DAT self GEN by car
Amerika e ik-ase-ta.
to America go-CAUS-PAST
'Kyoko let/made Yosio go to the U. S. in by her/his car.'

c. Kyoko$_i$ ga Yosio$_j$ ni zibun$_{i/j}$ no kuruma de
NOM DAT self GEN by car
Amerika e it-temorat-ta.
to America go-BENE-PAST
'Kyoko benefitted from Yosio's going to the U. S. by her/his car.'

This ambiguity in the reference of the reflexive is the direct consequence of the SUBCAT Extension Lexical Rule, as I have shown in the previous section. Since this type of lexical rules does not alter the original GFs, the original subject (agent) retains the GF [SUBJ].

The newly introduced argument XARG is the rightmost argument in the SUBCAT list. It follows from the generalization (17) that both the PP[SUBJ] and the XARG (marked by [ga]) can bind the reflexive; the result is the ambiguity.

5. CONCLUSION

In this paper I have proposed a new lexical approach to the passive sentences in Japanese in the basic framework of HPSG. The proposals center around the idea "SUBCAT Extension Lexical Rule" that I have introduced. The main claim is that the lexical rule deriving the indirect passive is a SUBCAT Extension Lexical Rule, while the rule deriving the direct passive is not. Since SUBCAT Extension Lexical Rules add one argument at the right end of the SUBCAT list without altering the original GFs of the arguments, the original subject (= Agent) of the indirect passive retain the GF SUBJ; on the other hand, the lexical rule of the direct passive takes the GF off from the original subject (= Agent), demoting it to a oblique function. This difference, I claim, results in the asymmetry of the reflexive binding in the passive, which has induced long discussion in the literature.

The concept of SUBCAT Extension Lexical Rule also enables us to connect the indirect passive with such derived structures as the NI-causative and the benefactive; they are all derived by this type of lexical rules. In particular, this approach provides a straightforward account of the referential ambiguity of the reflexive shared by all these three structures.

Another advantage of this approach is that it captures the similarity between the indirect passive and the other two structures mentioned above on the one hand, and the topic construction (of one type) on the other; they all involve SUBCAT Extension Lexical Rules. Of course, one must note that there is a crucial difference between these two. Topic Introduction Lexical Rule (TILR) is a secondary optional rule; the other lexical rules (PLR 1 and 2, CNLR, and BNLR) must precede this rule, and every output of these four lexical rules can undergo this rule. That is, the direct passive, the indirect passive, the causative, and the benefactive can be topicalized in the Base Topic type. Another important difference is that the output of TILR must undergo Topic Case Assignment Rule, while the other rules obligatorily induce the GC re-assignment rule (12). Aside from these points, the indirect passive, the NI-causative, the benefactive, and the Base Topic structures share essentially the same type of derivational rules, which explains the ambiguity in the reflexive binding common to all these four structures. Thus, the greatest advantage of this approach is the generality; it can cover not just one structure "passive" but three more constructions that show syntactic similarities.

Besides, the holistic character of HPSG (i.e. incorporating phonological, syntactic, and semantic information) along with the adoption of lexical rules allows a very simple syntactic representation. The difference among the four structures in question can be captured by referring directly to the semantic feature specifications.

NOTES

1. Throughout this paper I use the term "original" to refer to the structure before the application of a lexical rule.

2. To be precise, the passive of either type often bears this connotation. Despite the gloss that I give to the indirect passive as opposed to the direct passive, I hold the view that this connotation is outside the "semantics" of the passive. For more discussion on this matter, see Howard and Niyekawa-Howard (1976).

3. For several reasons I divide relational morphemes [ga], [wo], [e], [to], etc. into two classes: case markers and postpositions. Case marker signals the grammatical case (GC) such as NOM, ACC, DAT of subcategorized NPs, while postposition indicates the function of adjuncts. In that sense, postpositions correspond to the English prepositions. In the gloss of the examples, I will use GCs for case markers and the English prepositions for postpositions. For more argument on this division, cf. Miyagawa (1989:32-34)

4. For the transformational approaches on the passive construction in Japanese, refer to Kuroda (1978), Kuno (1973), Inoue (1976) among others; for the lexical approaches, Hasegawa (1981a,b), Farmer (1980, 1984), Ishikawa (1985), Miyagawa (1989); for the phrase structure approach, Gunji (1987).

5. These rules are partly based on Case Linking Rules of Farmer (1980, 1984).

6. GA also marks the object in some structures. Miyagawa (1989) refers to the verbs of this type as ergative verbs. This case marker also has a function termed as "exhaustivization", which is in a way analogous to "topicalization." I do not discuss these multi-functions of GA in this paper; I simply note that these two cases are different from the ordinary NOM-case of GA.

7. I use Topic (with capital T) to refer to the GF topic and the NP or PP associated with this function.

8. Gunji (1987) analyzes any type of Topic as an adjunct. When it is a gapped Topic, the SLASH feature connects it with the gap; when it is not related to any gap, it simply does not contribute to the FOOT features percolation. Though in some analyses the type of Topic in (19-a) seems to be assigned a vaguely more important status than an adjunct, its role is not clear in terms of the subcategorization.

9. There are some morphological variations. Some adjuncts can be marked by the combination of the original postposition and [wa]; some can be marked by [wa] alone. See also Gunji (1987:168-169).

10. Obviously, the selection of XARG is subject to some semantic and pragmatic restrictions. There must be some relation between XARG and the rest of the sentence. See also Kitagawa (1982) and Farmer (1984).

11. The concept "experiencer" used to refer to the function of XARG is borrowed from Miyagawa (1989).

12. For the expository purpose I use tree structures here. Most of the features other than SUBCAT are suppressed because they are not crucial now.

13. The difference between the NI-causative and the WO-causative has been the focus of argument. It is generally assumed that only "self-controllable" actions are possible in the NI-causative. They are syntactically different as well; transitive verbs can be causativized only in the NI-causative. This feature has also been associated with the surface constraint that restricts the two occurrence of [wo]. Another difference is the passivizability; the WO-causative, but not the NI-causative, can be passivized. In any case the causative structure requires an extensive study, which is beyond the scope of this paper. Here I will speak of the NI-causative alone, without even attempting to discuss the difference between the NI-causative and the WO-causative.

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PHRASE STRUCTURE RULES OF CHINESE TOPIC CONSTRUCTIONS*

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1. INTRODUCTION: DEPENDENCIES IN TOPIC CONSTRUCTIONS

Topic-prominence has been known as one of the typological features of Chinese. The grammatical configuration with the form of "topic-comment" has been much discussed in Chinese literature (cf. Chao 1968, Li and Thompson 1976, Huang 1982, Liu 1987, Xu and Langendoen 1985). Consider the following structures, which are referred to as typical examples of topic constructions:

(1) Nei-ke shu, yezi hen da.
That-CLA tree leaves very big
'As for that tree, the leaves are big.'

(2) Shuiguo, wo zui xihuan xiangjiao.
fruit I most like banana
'As for fruit, I like banana most.'

Each of the sentences in (1) and (2) consists of two parts: the topic, which occurs in the initial position, and the comment, a clause which follows the topic and says something about it. Such topic constructions must be considered as "basic" since they can not be derived from some "more basic" structures (cf. Teng 1974, Li and Thompson 1976, Huang 1982, and Jiang 1989 for discussion). Further, topic constructions may have multiple topics, particularly when they involve extraction (i.e. topicalization). What is interesting about extraction in topic constructions is that it is possible to topicalize an NP as shown in (3a), but not as in (3b).

(3)a. Shuiguo, xiangjiao$_i$ wo zui xihuan t_i.
fruit banana I most like
'As for fruit, banana, I like ____ most.'

b. *Xiangjiao$_i$, shuiguo, wo zui xihuan t_i.
banana fruit I most like
*'Banana, as for fruit, I like ____ most.'

As Huang (1982) notes, in sentences like (3), the gap in the lowest clause is usually construed as bound by the lowest topic, not by any higher one. The same can be observed in

the following sentences:

(4) [S Zhangsan$_i$, [S neixi ren$_j$ [S yige$_k$ [S ta dou bu renshi $t_{*i/*j/k}$]]]]
those man one he all not know
'Zhangsan, of those men, not even one, he knows ____'

(5) [S Zhangsan$_i$ [S ta xiangxin [S neixie shu$_j$ [S mei yiben$_k$[S Lisi
he believe those book every one
dou zhidao $t_{*i/*j/k}$]]]]]
all know
'Zhangsan believe that of those books, every one Lisi knows ____ .'

These constructions are accounted for in Huang (1982) in terms of the Subjacency Condition (Chomsky 1981), assuming that topic constructions have a structure roughly like the following, where the Comp is dominated by S' and topics are represented by Chomsky-adjunction to S nodes occurring to the right of the Comp.

(6) [S' comp [S top [S top [S ... t ...]]]

Further assuming that Move-α is a successive-cyclic Comp-to-Comp movement and S is a bounding node in Chinese, it is expected that the gap in the lowest clause can only be construed as bound by the lowest topic in accordance with the Subjacency condition.

However, as Liu (1987) shows, sentences with the indices indicated as in (7) and (8) are also possible in Chinese, where the gap in the lowest clause can be construed as bound by the topic in a higher position and the antecedent-gap dependency crosses two S nodes in any sense.

(7) [S Lisi$_i$, [S Zhangsan$_j$ [S ta$_j$ bu xihuan t_i]]]
he not like
'As for Zhangsan, Lisi, he doesn't like ____ .'

(8) [S Neige ren$_i$ [S Zhangsan shuo [S Lisi$_j$ [S ta$_j$ bu xihuan t_i]]]]
that men say he not like
'That man, Zhangsan says that Lisi, he doesn't like ____ .'

The grammaticality of (7) and (8) clearly shows the inadequacy of Huang's analysis. While maintaining the Subjacency point of view, Liu offers an alternative analysis, proposing that topicalization undergoes Top-to-Top movement instead of Comp-to-Comp movement and the Top node is introduced by the rules in (9).

(9) a. S" ---> TOP, S" (or S')
b. S' ---> COMP, S

Thus, for multi-topic constructions, relevant structures are roughly like the one in (10), where the topic is constructed to the left of the Comp.

(10) $[S''_1$ top $[S''_2$ top [S' comp [S ... t ...]]]

Following May (1985), Liu further assumes that S''_1 and S''_2 in (10) constitute a projection set, which counts as one category. In other words, S''_1 and S''_2 are considered simply as two segments of this category. An empty category is bound within a category of multiple segments if it is bound within a segment of the category. Thus, deeply embedded gap can be bound by the matrix topic in sentences like (7) and (8) through the trace in an intermediate Top node. The structure for (8), for example, looks like (11)

(11) Neige ren$_i$ [S Zhangsan shuo [S'' t_i [S'' Lisi$_j$ [S ta$_j$ bu xihuan t_i]]]]
that men say he not like
'That man, Zhangsan says that Lisi, he doesn't like ____ .'

Liu's proposal does provide explanations for the grammaticality of cross-topic binding in sentences like (7) and (8); however, it leaves the fact unexplained that in constructions like (3)-(5) the gap can only be construed as bound by the lowest topic but not by any one in a higher position, since the analysis predicts that topics are not island-creating and a deeply embedded gap can always be linked to a long-distance antecedent through the trace in an intermediate Top node.

In the framework defined in Gazdar et al. (1985) ---- hence GKPS, this paper argues that two types of topic constructions should be recognized, and these two types of constructions allow different patterns of structural depedencies due to the interaction of relevant phrase structure rules and general grammatical principles.

2. PHRASE STRUCTURES OF TOPIC CONSTRUCTIONS

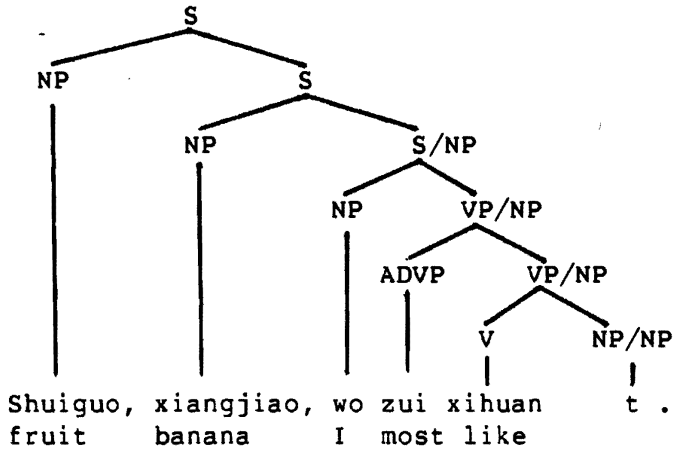
There is an important difference between sentences like (3)-(5) and those like (7)-(8). In general, when a resumptive pronoun is involved in a sentence as shown in (7)-(8), cross-topic binding is possible, whereas such binding is impossible if no (resumptive) pronoun is involved, as shown in (3)-(5). In view of these facts, I propose that the difference is due to the effects of different Immediate Dominance (ID) rules and the following three ID rules are responsible for Chinese topic constructions:

(12) a. S ---> NP, S
b. S ---> NP, S/NP
c. S ---> NP, S[RESUM NP]

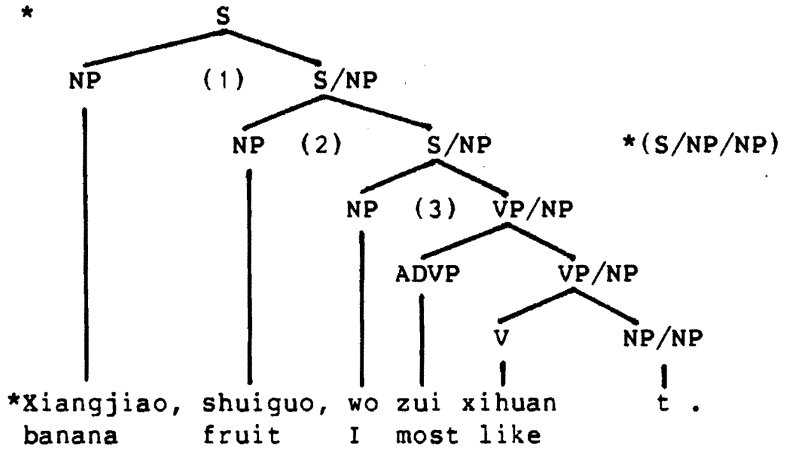
(12a) is the general rule responsible for introducing Chinese topic constructions, such as those in (1) and (2). (12b) is responsible for topic constructions involving unbounded dependencies (i.e. topicalization). (12c) says that a sentence can consist of a topic followed by a sentence containing a resumptive pronoun. Here RESUM is treated as a category-valued Foot feature. The Foot Feature Principle (FFP) will require RESUM to percolate to be associated with a (resumptive) pronoun which agrees with the topic in features such as person and number.[1]

Given the rules in (12) above, (3a) and (3b) will be assigned structures respectively as in (13a) and (13b).

(13) a.



b. *



The central issue here concerns (13b). Structures like (13b) are ill-formed only when the gap is associated with the first topic instead of the second. Intuitively, for sentences like (3), native speakers would associate the gap with the second topic, not the first. This amounts to saying that the grammar does not allow SLASH to percolate up beyond the lowest S node and to be instantiated on a higher S node in the present case. The analysis of extraction from a topic construction like (13b) can be accommodated by a universal principle, namely, the Proper Inclusion Principle, which reads roughly as follows (cf. Sanders 1974, Pullum 1979):

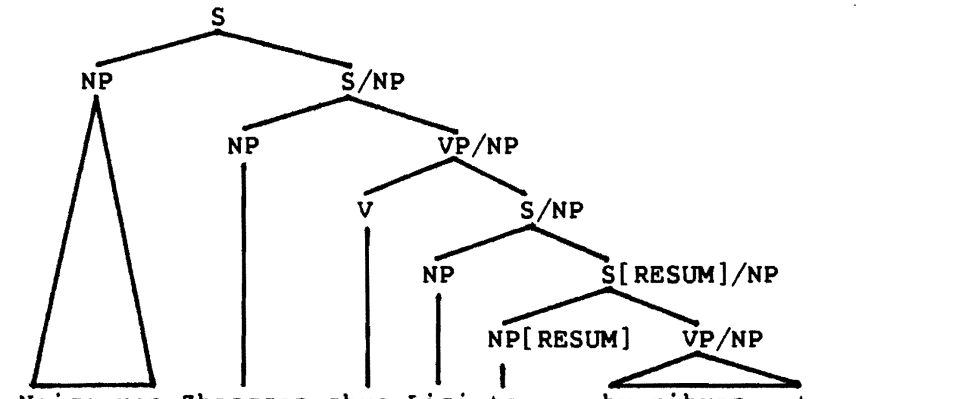
(14) Proper Inclusion Principle:

> For any representation, that satisfies the structural descriptions of both rule A and rule B, rule A applies instead of the application of rule B if and only if the structural description of rule A properly includes the structural description of rule B.

Referring to the present case, this principle has the effect that when two rules A and B seem to license a local tree, rule A applies instead of B if the structural description of A properly includes that of B. Thus, when SLASH occurs on the daughter node of the second local tree in (13), rule (12b) applies instead of (12a) since the structural description of (12b) properly includes that of (12a), plus an additional Slash feature specification. Thus, the Slash category on the daughter S node in this local tree is introduced by the ID rule S ---> NP, S/NP. The problem for (13b) is that if the instantiated SLASH on the mother S node in the second local tree is also instantiated on the daughter S/NP node in accordance with the FFP, a multiple Slash category like S/NP/NP would be created. Such a composition of a category is impossible because multiple Slash categories are prohibited by the grammar, as defined in GKPS.[2] Adopting this restriction in the tree construction, the structure has an apparent violation of the FFP, since in the second local tree of (13b), SLASH on the mother node is instantiated but SLASH on the daughter node is inherited.

On the other hand, multi-topic constructions involving resumptive pronouns have different structures. In view of the rule in (12c), the structure for (8), for example, is like that in (15).[3]

(15)



This structure satisfies the FFP, for nothing in this case prevents SLASH percolating beyond the lowest S node. The Proper Inclusion Principle is irrelevant in this case, since with respect to the two rules, (12b) and (12c), the structural description of neither one properly includes that of the other. Further, there is no corresponding ID rule in the grammar which contains an inherited SLASH on the daughter node and whose structur-

al description properly includes that of the rule S ---> NP, S[RESUM NP]. Thus, the grammar accounts for the contrast between (13a) and (13b), while allowing cross-topic binding in structures like (15).

3. FURTHER DISCUSSION: EVIDENCE AND MOTIVATION

The preceding section assumes phrase structure rules for the topic constructions without showing much evidence and attributes the different dependency phenomena to the effects of different phrase structure rules. In fact, there are quite a few pieces of evidence supporting this point of view. As mentioned in section 1, gapless topic constructions like (1) and (2) are basic in Chinese. It is plausible to assume that there is a rule like (12a) in the grammar.[4] Thus, the following discussion will focus on the rules in (12b) and (12c).

Gazdar (1981) suggests that the Foot feature SLASH can refer to resumptive pronouns as well as phonologically null categories. Maling and Zaenen (1982) propose that resumptive pronouns should be treated as being of the same syntactic type as empty categories. In languages such as Scandinavian languages, it seems plausible to claim that there is no overwhelming reason to assume that resumptive pronouns are syntactically different from empty categories; but there are reasons for assuming that resumptive pronouns and empty categories are syntactically different in Chinese.

As has long been observed, there are a set of sentence positions in which it is possible for resumptive pronouns to occur but impossible for empty categories, as shown by the contrast between the following sentences:

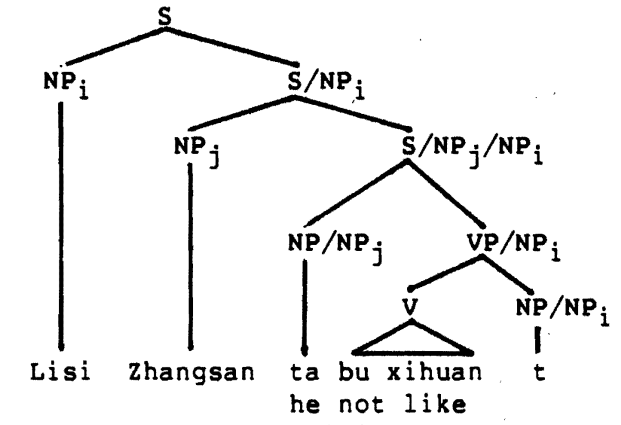
(16) a. Zhangsan$_i$, wo hen xihuan [ta$_i$ chang ge de shengyin].
I very like he sing song DE voice
'Zhangsan$_i$, I like very much the voice with which he$_i$ sings.'

b.*Zhangsan$_i$, wo hen xihuan [t$_i$ chang ge de shengyin].
I very like sing song DE voice
*'Zhangsan$_i$, I like very much the voice with which (e$_i$) sings.'

This indicates that resumptive pronouns and empty categories are different in terms of distribution.

Supposing that the Foot feature SLASH is used to encode the information of both empty categories and resumptive pronouns, multiple Slash categories would have to be allowed in the structure for a sentence like (7) as shown in (17) below:

(17)



'As for Zhangsan, Lisi, he doesn't like ____ .'

As a result, this would predict that crossed dependencies (or nested dependencies) should be allowed in Chinese. However, there is evidence showing that crossed dependencies are ungrammatical, especially when only empty categories are involved. In general, when the antecedent-gap dependencies are arranged serially, the sentence is grammatical; but if multi-topic sentences are constructed with nested or crossed dependencies, the grammaticality of such sentences would be greatly diminished, even though they might be sometimes, as Xu and Langendoen (1985) note, not fully unacceptable. Structures with serial, nested, and crossed dependencies can be shown by the examples in (18), (19) and (20) respectively.

(18) Zhangsan$_i$, wo yiwei t_i yijing gaosu ni neiben shu$_j$ Lisi
I think already tell you that book
bu xihuan t_j.
not like
'Zhangsan$_i$, I thought ____$_i$ told you already that the book$_j$ Lisi
didn't like ____$_j$.'

(19) *Neiben shu$_i$, Zhangsan$_j$ wo yiwei t_j yijing gaosu ni Lisi
that book I think already tell you
bu xihuan t_i.
not like
*'That book$_i$, Zhangsan$_j$ I thought ____$_j$ told you already that Lisi
didn't like ____$_i$.'

(20) *Zhangsan$_i$, Neiben shu$_j$ wo yiwei t_i yijing gaosu ni Lisi
that book I think already tell you
bu xihuan t_j.
not like
*'Zhangsan$_i$ that book$_j$ I though ____$_i$ told you already that Lisi
didn't like ____$_j$.'

Obviously, the structural difference between (18) and (19) or (20) is that structures with crossed dependencies (or nested dependencies) require multiple Slash categories. These examples suggest that it is generally correct to prohibit multiple Slash categories in the grammar.[5] Thus, crossed dependencies are well-formed only when the dependencies to empty categories and that to resumptive pronouns cross each other. One possibility of handling this situation is to mark Slash specifications for empty categories and those for resumptive pronouns respectively. But this in effect amounts to treating empty categories and resumptive pronouns in two separate features.

The strongest argument for a Slash-category representation of resumptive pronouns so far suggested in the literature comes from coordination constructions. It is widely assumed that coordination is possible only between constituents of exactly the same syntactic type. There are data which seem to suggest that resumptive pronouns and empty categories are of same syntactic type, as shown by the following Hebrew example:

(21) ha'is se rina baxra ___ ve ohevet oto
the-man that Rina chose ___ and loves him

If resumptive pronouns are not of the same syntactic type as empty categories, then coordination between constituents containing empty categories and those containing resumptive pronouns should not be possible.

However, other coordination constructions provide equally strong evidence against a Slash-category analysis of resumptive pronouns. The following example is also from Hebrew:

(22) ha'is se rina ohevet oto ve et dani
the-man that Rina loves him and Dani

In (22), a resumptive pronoun coordinates with a lexical NP. By the same reasoning, resumptive pronouns should be of the same syntactic type as lexical NPs. It has been reported in the literature that parallel phenomena can also be observed from other languages.[6] In fact, coordination is rather complex. Though coordination has been widely used to test constituency structure, it is not difficult to find coordination between constituents of different syntactic types, such as:

(23) a. John is at home and happy now.
b. John walked slowly and with great care.

In (23a), a PP coordinates with an AP; In (23b) an ADVP coordinates with a PP. In view of all these facts, coordination constructions have not provided any compelling arguments for a Slash-category analysis of resumptive pronouns.

One more thing should be mentioned concerning resumptive pronouns. Though they usually are morphologically and phonologically identical to personal pronouns, resumptive pronouns can not refer freely. In the examples (7) and (8), repeated below, the pronouns can not be understood as referring to some individuals in the context or some individuals previously mentioned.

(24) [S Lisi$_i$ [S Zhangsan$_j$ [S ta$_j$ bu xihuan t_i]]]
he not like
'As for Zhangsan, Lisi, he doesn't like ____ .'

(25) [S Neige ren$_i$ [S Zhangsan shuo [S Lisi$_j$ [S ta$_j$ bu xihuan t_i]]]]
that men say he not like
'That man, Zhangsan says that Lisi, he doesn't like ____ .'

In each of the two sentences, the pronoun must be understood as coindexed with the NP in a topic position.[7] This is an evidence supporting the assumption that resumptive pronouns are introduced by phrase structure rules rather than freely instantiated.

4. CONCLUSION

This paper shows that assuming empty categories and resumptive pronouns are syntactically different in Chinese, the dependency phenomena in topic constructions can be accounted for by recognizing two types of phrase structures of topic constructions. If this analysis is correct, topic constructions, as a case in point, suggest the inadequacy of the Subjacency Condition, and serve as independent evidence in favor of invoking the Proper Inclusion Principle in Chinese.

NOTES

* I wish to thank Tom Hukari and WPLC editors for their comments and suggestions.

[1] The FFP is informally stated as follows (cf. Sag et al. 1985, p. 146):

The Foot features instantiated on the mother node in a local tree are identical to the unification of the Foot features instantiated on the daughter nodes in that local tree.

[2] In GKPS, a category is defined as a (partial) function from a the set of features to the set of values and thus it is impossible to form a unification of two sets of feature specifications that disagree on the value of some feature.

[3] A detailed discussion on resumptive pronouns is a topic for further research. See section 3 below for related discussion.

[4] As Xu and Langendoen (1985) note, all maximal projections can be topics. Thus, (12a) can be stated in a more general form like S ---> XP, S. The form of (12a) is

used here merely for simple disposition. Also the rule (12b) is simply a case of the general rule S ---> XP, S/XP.

[5] In Chinese, some constructions with multiple Slash categories may not be fully unacceptable to some speakers. Such constructions, I believe, are allowed in quite a limited domain and their interpretation needs strong contextual information.

[6] The two Hebrew examples are taken from Sells (1984, p. 324). It is difficult to test Chinese in this regard since it is generally difficult for Chinese coordination to involve resumptive pronouns and other categories (including empty categories). Interested readers are referred to McCloskey (1979), Schachter (1981), and Sells (1984) for related data and discussion of other languages.

[7] In each of the two sentences, it is also possible for the resumptive pronoun to be coindexed with the initial topic, and then the empty category will be understood as being coindexed with the second topic. But it is impossible that the resumptive is understood as being coindexed with an NP other than a topic.

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CONTROL IN OBJECT-GAPPED PURPOSE INFINITIVE CONSTRUCTIONS*

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1. INTRODUCTION.

This paper offers a critical examination of the hypothesis that the control relation between filler and gap in sentences such as the following may be identified in the syntax by independently needed principles of Generalized Phrase Structure Grammar (GPSG).

(1) Kim brought it_i to eat e_i on the trip.
(2) The $contract_i$ was available to look at e_i in the attorney's office.

I suggest that the feature instantiation principles handling control (as in subject-verb agreement or filler-gap dependences in unbounded dependency constructions--UDCs) should not extend to the link between controller (filler) and gap in these object-gapped purpose infinitives (hereafter, OPCs--Object-gapped Purpose Constructions).[1]

In Hukari and Levine (1987) we argue that purpose clause gaps should be grouped with missing object (*tough*) constructions

(3) $Sandy_i$ is difficult to reason with e_i.

and *too/enough* optional object constructions,

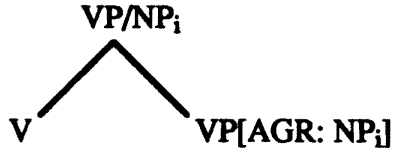
(4) $Leslie_i$ is too tired/alert enough to talk to e_i.

all three to be treated as unbounded dependency constructions represented by a category-valued feature we named GAP, written as a double slash '//' and distinct from the GPSG unbounded dependency construction feature SLASH, found in such canonical unbounded dependency constructions as wh-question extractions. We argue there that the filler-gap linkage in such constructions should follow without stipulation from the independently-motivated control system in Gazdar, Klein, Pullum, and Sag (1985, henceforth GKPS).

Without going into our discussion in detail, I note here simply that the structural parallels between (3) and (4) above and the control system in GKPS as it pertains to subject extraction are striking. For example, subject gaps in interrogative constructions involve structure such as the following

(5) Who do you [$_{VP/NP_i}$ think [$_{VP[AGR:\ NP_i]}$ saw Kim]]

where the control principles recognize a link between the value of SLASH (that is, $/NP_i$) in mother VP/NP_i and the agreement feature AGR in daughter VP[AGR: NP_i]. And SLASH percolates up the tree, ultimately linking with *who*.[2]

(6) 

A similar connection is established in the following examples between AGR in A^1[AGR: NP_i] and GAP in $VP//NP_i$ if GAP, like SLASH and AGR, is a control feature.

(7)[= (3)] Sandy$_i$ is [$_{A^1[AGR:\ NP_i]}$ difficult [$_{VP//NP_i}$ to reason with e_i]].

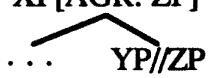
(8) [= (4)] Leslie$_i$ is [$_{A^1[AGR:\ NP_i]}$ too tired/alert enough [$_{VP//NP_i}$ to talk to e_i]].

And this parallel extends to purpose infinitives in passive contexts as well.

(9) The book$_i$ was [$_{VP[AGR:\ NP_i]}$ bought [$_{VP//NP_i}$ to read e_i on the trip].

In these cases, it is AGR which percolates up the tree linking with the matrix subject, and the filler-gap linkage is established by the control system of GKPS simply by including GAP among the control features. Thus we find an interesting formal parallel between control in wh-extraction contexts and missing object constructions with non-local control as illustrated in the following diagrams.

(10) Subject Extraction: 

Missing Objects: 

The inclusion of OPCs in the Hukari-Levine account of control in missing or optional object constructions seems reasonable in light of passives such as (9). However I wish to reassess this move in light of a fuller range of contexts, such as the following where the controller is local.

(11) We gave Sandy a stuffed animal to play with e.
(12) We gave a stuffed animal to Sandy to play with e.
(13) The chef entrusted the potatoes to Kim to peel e for the stew.
(14) The chef entrusted Kim with the potatoes to peel e for the stew.

It is such examples--in particular, cases involving more than one potential controller in the sense that the verb has more than one nonsubject argument--which lead me to suggest that control in OPCs falls outside the syntax.

The remainder of this paper develops two points which push me in this direction. First, the purpose infinitive may best be thought of as a modifier, not a complement--removing it from the typical GPSG control cases; and second, the identification of controller may crucially involve thematic relations, where the controller of the gap corresponds to the argument of the matrix verb which is construed as, essentially, a theme. It is far from obvious that thematic roles must be invoked in a theory of obligatory control structures, though numerous accounts of control (more narrowly construed than in GKPS) have invoked thematic roles (see for example Jackendoff, 1972, Nishigauchi, 1984, Sag and Pollard, ms.), but purpose infinitives may be exceptional in this respect.[3]

2. CONTROL AND SUBCATEGORIZATION.

In Hukari and Levine (1987) our position was that OPCs are optional complements and when the controller is present as sister to the gapped VP, control is parallel to *persuade* contexts.

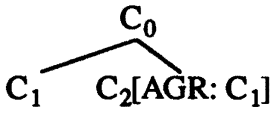
(15) Kim [$_{VP}$ bought it$_i$ [$_{VP//NP_i}$ to give e to her friends]].

(16) Kim [$_{VP}$ persuaded Sandy$_i$ [$_{VP[AGR: NP_i]}$to sing]].

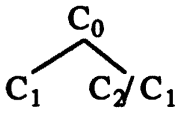
That is, in both cases the control feature of the infinitive VP (GAP, AGR) agrees with the controller sister (*it*, *Sandy*). This is based on the account of control given in GKPS, where essentially three cases emerge.

A. **The argument controls the functor**. In the structure $[_{C_0}\ C_1\ C_2\ ]$, where C_2 is a predicative category, C_1 controls C_2 if the intensional logic (IL) type of C_2 is $\langle TYP(C_1), TYP(C_0)\rangle$. This handles subject verb agreement (SVA) and control at the tops of UDCs as in the following diagrams.[4]

(17) a. SVA:

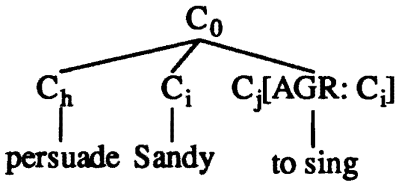


b. UDCs:

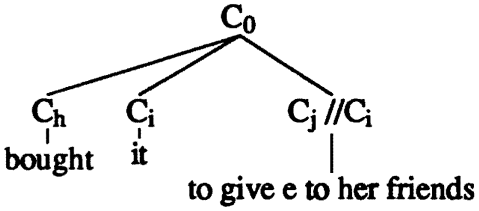


B. **The next argument in**. In the structure $[_{C_0}\ C_h \ldots C_i \ldots C_j \ldots]$ where C_h is the head and has the IL type $\langle \ldots, \langle C_j, \langle C_i, \ldots\rangle \ldots\rangle \ldots\rangle$, C_i controls a predicative category C_j. This handles cases such as *persuade* and, under the account in Hukari and Levine (1987), local control of OPCs.[5]

(18) a.



b.



C. **Non-local control**. If a predicative category C_i has no controller, then its control feature agrees with that of the mother. This handles control of infinitives in *try* contexts, subject extraction as discussed above, as well as *tough* and *too/enough* gaps.

The relationship between subcategorization and control may not seem obvious, but the account works as follows. If a verb is subcategorized for OPCs, then it takes them as arguments in the semantics. So, for example, the type of *buy* in contexts where it takes an OPC is roughly <VP//NP, <NP, VP>>, and the object NP, as the next argument in after the OPC, controls the latter by case B above.

The hypothesis embodied in the Hukari-Levine analysis of (15) can be broken down into two parts: (a) the OPC is a sister of the controller and the lexical head and (b) the head is subcategorized for the OPC. For case B of control to be applicable, both conditions must be met. I turn to the evidence for subhypothesis (a), including OPCs in minimal VP, in section 3, concentrating on subhy-

pothesis (b), the matter of subcategorization, in the section two. But before turning to this, I should point out that (b) may not be essential. Hukari and Levine (in progress) make the conjecture that the control system can be simplified considerably by eliminating reference to IL types: a controllee (predicative category) is controlled by a nonhead sister (subsuming cases A and B) and, failing that, case C above applies. This purely configurational account of control has lexical exceptions. So for example, *promise* will be marked as an exception and case C applies. Under this account it is possible that OPC control is strictly configurational. It might still be necessary for the controller to be a sister, but subcategorization may not be at issue.

3. SUBCATEGORIZATION.

Returning to the question of subcategorization, Faraci (1974), Bach (1982) and Dowty (1982b) characterize the contexts supporting OPCs essentially in semantic terms.[6] As Jones (1985a) puts it, the predicates supporting OPCs must have themes which "... must be at hand, available for some subsequent possible manipulation":

(19) OPC must be controlled by a (subsequently possible) Patient. [Jones, 1a.2][7]

Jones argues that, given a semantic characterization of the contexts supporting OPCs is possible, then this should not be viewed as subcategorization, as a semantic characterization is generally not available in cases of subcategorization--compare, for example, *eat*, *dine*, *chew*, *devour*, each with its own distinct combinatorial possibilities despite their shared semantic similarities.

Green (forthcoming) takes a somewhat different position which leads to the same conclusion, that the contexts supporting OPCs should not be described by subcategorization. She presents evidence suggestive of pragmatic conditions. Starting with the assumption that a context supporting OPCs is one which "...asserts or entails possession or control of the entity corresponding to the gap by the inferred controller of the infinitive verb," she argues that entailment of possession or control may be inferred from context. Her example is the verb *(to) redline* , meaning to refuse to insure property in a given area. Given a context in which an insurance company redlines an area in order to buy investment property cheaply, she asserts one can say

(20) They redlined it to build high rises on t.

The critical point here being that the context--not the semantic meaning of the verb itself--entails that the company will have possession before the activity. The obvious conclusion to be drawn from this is that the class of verbs supporting OPCs is not enumerable by syntactic or semantic criteria. Hence her argument has more force than Jones', since he argues that the class of verbs should be defined semantically since a semantic definition is possible, whereas Green argues that the class of verbs cannot be defined wholly by subcategorization (or in the semantics, for that matter).

While Green's example seems plausible, I would be more comfortable with this line of argumentation if I could understand why the following does not seem to work out.

(21) If Kim touched anything, she gained ownership of it.
(22) Seeing a nice vase, she touched it to give e to her mother.

Seemingly a context from which one infers possession before the activity (i.e., of giving the vase to her mother) is perhaps a necessary but not a sufficient condition for a verb to support OPCs.

Both lines of argumentation (Jones' and Green's) merit further investigation, but if we take the evidence at face value, it suggests that the contexts supporting OPCs should not be defined by subcategorization.

Green suggests that OPCs are modifiers, but ones which appear in minimal (lexically headed) VP, licensed by a metarule along the following lines.

(23) [+V] → W, NP ⇒ [+V, PURP] → W, NP, VP//NP

The distinction between complement and modifier/adjunct may seem fuzzy at this point, but the introduction of OPCs via a metarule militates against lexical exception. OPCs then are sisters to the lexical head, but one might choose not to think of them as complements because the syntax says any transitive verb can take one. Insofar as verbs do not support OPCs, this would not be a fact of subcategorization and syntax, but something residing in the semantics or the semantic/pragmatic interface.

Whether the conditions determining contexts which support PCs are viewed as semantic or pragmatic constraints, the defectiveness of sentences (or corresponding utterances) such as (24) are then essentially on a par with (25) through (27), under the assumption that the italicized PPs in the latter are adjuncts.

(24) Kim threw it away to take to school.
(25) Kim knew the answer *with a sliderule.*
(26) Sandy contains DNA *for her mother.*
(27) Shelly is myopic *in Detroit.*

The speaker, in uttering (24) must believe that Kim's throwing something away constitutes an event which, in itself, makes the object available for a future event in which Kim (or possibly someone else) takes the object to school. But given what it means to throw something away, this scenario is just about as bizarre as a situation in which it makes sense to say *Sandy contains DNA for her mother*, where the speaker surely must believe that Sandy's containing DNA would not be so if Sandy had not brought about that state of affairs for the purpose of somehow benefitting her mother.

Another argument against treating OPCs as complements in the relevant sense is that it entails a proliferation of lexical ID rules.[8] For most classes of verbs which take, among other things, an NP object, there will be members which also permit OPCs. So consider the following ID rules from GKPS.

(28) VP → H[2], NP (*take*)
(29) VP → H[3], NP, PP[to] (*send*)
(30) VP → H[4], NP, PP[for] (*buy*)
(31) VP → H[5], NP, NP (*buy*)
(32) VP → H[6], NP, PP[+LOC] (*put*)

The verbs in parentheses to the right of the rules support OPCs, which means that for each of these rules there must be a corresponding one introducing OPCs. If, in fact, the contexts not supporting OPCs can be defined semantically, then Green's metarule makes more sense. And of course if the contexts can only be defined pragmatically, then subcategorization cannot offer an observationally adequate account.

In summary the control formalism in GKPS requires OPCs to be complements of verbs if these are to be controlled in turn by verb complements (see section 1 above). While this is what Hukari and Levine (1987) assume, we may distinguish between subcategorization, on one hand, and membership in lexical VP on the other. Hukari and Levine (in progress) suggest that local control in lexically headed contexts may be stated without an appeal to types. If so, complements of verbs may serve as controllers of OPCs even if OPCs themselves do not correspond to semantic arguments of these verbs. However the revisions in control envisaged would still require that the OPC and its controller be sisters, though I conclude section in the next section that this structural criterion is met. Thus the structure of OPCs may not in itself exclude them from the control theory.

4. CONSTITUENCY.

Tests for VP internal constituency are not, to my mind, particularly robust, though the evidence suggests that OPCs are in minimal VP. Faraci (1974) notes that OPCs, unlike purposive clauses (which optionally are prefaced by 'in order to') do not freely prepose. This is at least suggestive of the hypothesis that OPC are in minimal VP and hence available to control from verb complements, while purposive clauses are outside minimal VP.[9]

(33) a. Kim gave it to Sandy to play with e on the train.
b.*To play with e on the train, Kim gave it to Sandy.
(34) a. Kim gave it to Sandy (in order) to appear generous.
b. (In order) to appear generous, Kim gave it to Sandy.

And this is consistent with the contrast between purposives and OPCs in VP preposing (see Jones, 1985b).

(35) Kim said she would give it to Sandy and give it to Sandy, she did in order to please her mother.
(36)*Kim said she would give it to Sandy and give it to Sandy, she did to play with.
(37) Give it to Sandy though Kim did in order to please her mother, she certainly didn't want to.
(38)*Give it to Sandy though Kim did to play with, she certainly didn't want to.

The two constructions also contrast in pseudoclefts in a way consistent with the assumption that OPCs are in minimal VP while purposives are outside (see Jones, 1985b).

(39) What Kim did (in order) to please her mother was give it to Sandy.
(40)*What Kim did to play with was give it to Sandy.

Do so constructions show similar contrast.

(41) Lee gave marshmallows to Sandy to please his mother and Kim did so to please her aunt.
(42)*Lee gave marshmallows to Sandy to play with and Kim did so to eat.

And when OPCs and purposives co-occur, the former precede the latter, which is at least consistent with the hypotheses that OPCs are inside minimal VP and purposives are outside (see Faraci).

(43) Kim gave it to Sandy to play with to please her mother.
(44)*Kim gave it to Sandy to please her mother to play with.

Finally, as noted in Hukari and Levine, if OPCs are in minimal VP, this explains why they, unlike purposives, are accessible for wh-extraction.

(45) Who did Kim buy it/the ticket to send to?
(46)*Who did Kim buy it/the ticket (in order) to send e to China? (e.g., Kim bought the ticket in order to send Sandy to China.)

It is assumed in GPSG that the UDC feature SLASH is both a FOOT feature and a HEAD feature (see Sells, 1983). As a HEAD feature, SLASH must stay on the head path unless the head is lexical.[10] This accounts for the fact that extraction from complements, such as subordinate clauses, is possible, but not from adverbial clauses.

(47) What does Kim think Sandy read e before she filed the notes?
(48)*What does Kim think Sandy read the notes before she filed e?

In conclusion, the evidence discussed so far by no means eliminates OPC control from the syntactic control system of GPSG. The OPC and verb complements may well be sisters, hence the OPC is accessible for control by the latter. And, as noted above, whether or not verbs are subcategorized for OPCs (thereby taking them as semantic arguments) will be immaterial if control theory does not invoke IL types. But I now turn to considerations which suggest that a syntactic treatment of control in these contexts may not be desirable even if such an account is feasible.

5. THEMES AND TRANSACTIONAL VERBS.

So long as we confine ourselves to simple transitive verbs, an account of control in OPC contexts seems unproblematic. Given that a transitive verb (pragmatically or semantically) supports OPCs, its object controls the gap. Supposing control in GPSG is as suggested above: the controller of a predicative category is a nonhead sister, then cases such as the following are accommodated even if OPCs are not treated as arguments of the verb.

(49) Kim bought it to give to her mother.
(50) Sandy made it to wear to the party.

But the following may be a problem if the OPC has two nonhead sisters.

(51) Lee bought it for Sandy to wear to the party.[11]
(52) Sandy sent it to Lee to give to his mother.

We might assume that either the NP object or the PP could, in principle, control a predicative category but OPC gaps must be NPs, thus only the object counts as the controller.[12] As it turns out, speakers' judgments are split on this. Some reject PP controllers of OPCs while others accept them. I consider each case below. The case of speakers who accept PP controllers when they are themes--coupled with the peculiar fact that there is such variation among speakers--leads me to suggest that the filler-gap relation in OPCs falls outside a syntactic account of control.

6. STRICT NP CONTROL OF OPCS.

Speakers who reject PP controllers should find the following (a) sentences grammatical (subject to some individual variation as to subcategorization properties of the relevant verbs), but not the (b) sentences, as indicated here, where '#' indicates the examples are unacceptable for these speakers.

(53) a. The school district provides them/cots to the children to lie on during their nap period.
b.#The school district provides the children with them to lie on during their nap period.
(54) a. The NRA presented them/capguns to him to give to young children.
b.#The NRA presented him with them to give to young children.
(55) a. His mother entrusted it/the python to him to look after on the trip.
b.#His mother entrusted him with it to look after on the trip.

Suppose we say that somehow only an NP may control the OPC. Then the controller is the NP sister of the OPC, if any exists. In the corresponding passives of the (a) examples, there is no NP sister, so case C of control applies, correctly identifying the subject as the controller.

(56) They are provided to the children to lie on during their nap period.
(57) They were presented to him to give to young children.
(58) It was entrusted to him to look after on the trip.

A problem with this approach arises when the verb phrase contains two noun phrases.

(59) Sandy gave Kim Robo to play with.

Clearly only *Robo* can control the gap, yet *Kim* is also an NP sister to the infinitive VP. A possible move (following Green, ms.) is to say that control is semantically (or pragmatically) constrained: while either NP is a syntactic controller, *Kim* is filtered out by the semantics. This, in fact, is consistent with an account of the illformedness of the (b) examples in (53)-(55) above. The direct object is identified as the controller, but this violates a semantic constraint that the controller must be a theme.[13]

And the ungrammaticality of passive counterparts of the (b) examples is also predicted.

(60) #The children are provided with them to lie on during their nap period.
(61) #He was presented with them to give to young children.
(62) #He was entrusted with it to look after on the trip.

Since PP is not a possible controller, case C of control applies and the matrix subject is identified as the controller, but these are caught by the semantic/pragmatic constraint that the controller must be the theme.

Therefore, so long as we confine our attention to speakers who reject PP controllers, as in the (b) examples, it seems possible to construct what amounts to a structural account of control in OPC contexts. While thematic roles come into play, they are not imported into the syntax.[14]

7. PP CONTROL IN OPCS.

A serious problem with this barring PP as a controller in OPCs arises when we are confronted with examples such as the following from Waksler (1984) and Kirkpatrick (1982), where the object of the preposition seems to be the controller.

(63) I've been asking her for it for six months to use e in the lab. [Waksler (5)]
(64) He supplied Marta with them to hand out e at the party. [Kirkpatrick (19a)]

There is considerable speaker variation as to the acceptability of (putative) PP controllers of OPCs, but some speakers accept (or even prefer) the PP-controller sentences in In (53)-(55) above, repeated here.

(65) a. The school district provides them/cots to the children to lie on during their nap period.
b. The school district provides the children with them to lie on during their nap period.
(66) a. The NRA presented them/capguns to him to give to young children.
b. The NRA presented him with them to give to young children.
(67) a. His mother entrusted it/the python to him to look after on the trip.
b. His mother entrusted him with it to look after on the trip.

For these speakers, it seems that either an NP or a PP controls the OPC, provided it is the theme.

Waksler, working within a LFG analysis, suggests that these controllers are actually 2-object noun phrases and that the verbs are complex (i.e., *ask-for*, *supply-with*). But it is not obvious to me how her proposal is to be implemented in light of the fact that the verb and the preposition are not adjacent. Further, contra her claims, pied piping is possible in most cases.[15] (68b) is not very good

(68) a. I have been asking for it to use in the lab.
b.?This is the device for which I have been asking to use e in the lab.

but I suspect the problem involves misparsing, since *ask* also subcategorizes for an infinitive complement, as in *I have been asking to use this device in the lab.* The following sentences are perhaps better, with the caveat that not all speakers accept the (a) examples, let alone the (b) examples.

(69) a. He supplied Marta with them to hand e out at the meeting.
b. These are the pamphlets with which he supplied Marta to hand e out at the meeting.
(70) a. The stewardesses have provided the children with them to play with on the flight.
b. These are the stuffed animals with which the stewardesses have provided the children to play with on the flight.

Thus it seems that, for some speakers, PPs can be construed as fillers of OPC gaps. This does not rule out a syntactic analysis of the filler-gap relation, though it makes the approach perhaps less credible than saying that the connection is semantic and that the theme, whatever its syntactic role, controls the gap. Note however that some EQUI contexts seemingly involve PP controllers, as in the following examples.

(71) Kim appealed to Sandy to leave the party.[16]
(72) We can rely on Kim to extricate himself from any problem.

So we cannot rule out in principle a control relation between a prepositional phrase and a control feature whose value is NP. (See the appendix for further discussion of how objects of prepositions may be made accessible as controllers.)

But if features of both the object of the verb and the object of the preposition are accessible in an account of OPC control, what tells us that the PP is the controller in (73) while the NP is the controller in (74)?

(73) Kim provided Sandy with books to read e on the trip.
(74) Kim provided books to Sandy to read e on the trip.

As it turns out, constructing a syntactic account of this difference is nontrivial. In fact, even an account which imports semantic argument structure (i.e., obliqueness as in Dowty, 1982a and b) runs into difficulties. Suppose we say that the controller is the most oblique NP-type argument of the verb. Under the assumption that the prepositions associated with themes are essentially grammatical markers (case-markers), we can assume they are specified for the feature PFORM and translate as NP-types (see GKPS). The following is an approximation of the condition.

(75) The controller of an OPC is a sister corresponding to the most oblique argument in the type structure of the translation of the lexical head.

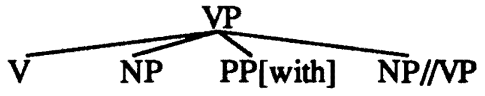
So, for example, the head *entrust* will be type $<\tau(NP), <\tau(NP), \tau(VP)>>$ in (67b), where the first NP-type is the most oblique and corresponds to the translation of *with it*. Thus the PP should be the controller.

While this account looks possible, there are serious problems in implementing it in a GKPS-style grammar. The information available to the feature-instantiation system includes an immediate dominance rule

(76) VP → H[#], NP, PP[with], VP//NP

a local tree

(77)



and the type of the verb: $<\tau(NP), <\tau(NP), \tau(VP>>$. The syntax does not have access to the translation schema and the IL representation, so we have no means of determining that the PP--not the NP--translates as the most oblique NP-type argument, that the IL representation is roughly

(78) entrust'(it')(him')(his-mother')

where the left-most argument is the most oblique. In short, the notion of obliqueness is not available in the syntax. There are of course a number of moves making such information accessible, such as employing a subcategorization list or 'stack' (see Pollard 1984, Pollard and Sag, 1987). Alternatively, grammatical relations might be encoded as features (see Zwicky, 1987).

But even if an obliqueness relation were available in the syntax, the condition that the controller must be the theme would somehow have to override control. Consider again the passive counterparts to (53)(a) through (55)(a) above.

(79)They are provided to the children to lie on during their nap period.
(80) They were presented to him to give to young children.
(81) It was entrusted to him to look after on the trip.

In each case the most oblique NP-type sister (the only NP-type sister) is the to-PP. The syntax then identifies this as the sole potential controller of the OPC and the semantics or pragmatics must filter it out because it is not a theme. But this incorrectly yields the result that the sentences should be unacceptable, whereas the subject should be interpreted as the controller. The notion of obliqueness seems to do no work here at all, and one might as well say that the controller of the OPC is the argument of the verb which is the theme.

A further reason for rejecting a type-based account of OPC control identifying the most oblique NP as controller is the fact that this offers no explanation for why the *to*-PP objects do not function as controllers, under the assumption that a *to*-PP is more oblique than the direct object (see Dowty, 1987).[17]

(82) John gave it to her$_j$ to play with $e_{i,*j}$ on the trip.

The moral here is that a syntactic account of these speakers' judgments needs access to the notion theme, but incorporating thematic roles into the syntax seems a dubious move at best (see, e.g., Dowty 1987).

In summary, syntactic accounts of OPC control are problematic. Further, grammaticality judgments vary considerably. Insofar as we can say that the theme (if anything) is identified as the controller, this may be a unique case in English where a thematic role is so instrumental (see Ladusaw and Dowty, 1988, and Jones, 1988). Rather than importing thematic roles into the syntax for this one case, it seems credible to assume instead that OPC control is outside the syntax. In fact, this move makes the variation in speakers' judgments perhaps more understandable.

NOTES

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[1]The gap in such constructions may be the object of a preposition or a verb.

[2]Directionality actually plays no role in feature instantiation. So it is just as appropriate (or inappropriate) to say that SLASH works its way down the tree.

[3]I am assuming a much broader theory of control than one describing, for example, lexically governed EQUI contexts (e.g., *promise/persuade*), namely that proposed in GKPS. One might of course reach very different conclusions if control is construed differently from the domain set out in GKPS.

[4]The presentation here is highly informal and departs from GKPS in various respects for the sake of perspicuity. For example, linear order plays no role in the control system as defined in GKPS.

[5]As Green (ms) notes, the definitions in GKPS do not allow VP/NP (or VP//NP) to be a predicative category, which must be of type <NP, S>. Let us assume for the discussion that a predicative category is one containing SLASH or GAP inherited from an ID rule, or VP.

[6]Bach assumes that a very limited set of verbs, *have* and *be* are subcategorized for PCs. As to the others, both Bach and Dowty treat these as TVP (transitive VP) modifiers.

[7]I am not assuming a distinction between theme and patient. A very interesting point which I have not pursued here is the relationship between theme-controllers in this construction and Dowty's properties of proto-patients (Dowty, 1987).

[8]This argument is not tied to the treatment of subcategorization in GKPS, where subcategorization frames are eliminated from lexical entries, replaced by subcategorization indices linked to ID rules (as values for the feature SUBCAT associated with the head). If the lexicon contains subcategorization frames or perhaps a list-valued subcategorization feature as in Pollard (1984), there will be a proliferation of lexical entries not accounted for by rules.

[9]See also Browning (1987) for a review of the literature concerning the structure of OPCs as opposed to purposives.

[10]SLASH is prevented from entering lexical categories in GKPS by a feature coocurrence restriction: [SUBCAT] $\supset \neg$[SLASH]. This overrides the Head Feature Convention, so the mother may contain SLASH when the head does not.

[11]There may be two parsings for this example: one in which *for* is a complementizer and the intended one, where it is a preposition. Latter offers an explanation for the grammaticality of *Who did Lee buy it for to wear to the party?*

[12]There may be independent need to restrict the value of the feature GAP NP or S. Certainly these are the only two possible values in *tough* contexts:

(i) That Sandy killed the duchess would be difficult to prove.
(ii)*In the kitchen would be difficult to hide the letters.

I turn to examples below, however, where PP appears to control OPCs.

[13]Ditransitives are noted by Dowty (1982b), whose analysis extends Bach's (1982) by offering an account in the context of categorial grammar for (i) the following with *War and Peace* as the controller of the gap.

i. John gave Mary *War and Peace* to read to the children. [Dowty (35)]

Apparently nothing in his analysis prevents *Mary* from being a possible gap-controller, thus his analysis also involves semantic/pragmatic filtering (as does Bach's).

[14]I do not address here the problem of excluding PP as a possible controller in OPC contexts. Though I see no problem in principle, this is bound to add an unwelcome addition to level of complexity in the control formalism.

[15]Waksler's examples are wh-questions. Pied piping improves, at least for me, in relative clauses.

[16]Sag and Pollard (ms.) give this example as well as

(i) *It was decided by Bill to leave the party.*

While the latter seems relevant on the face of it, I am not convinced this is a normal case of control, as

(ii) *It was decided by Bill to behave himself*

is very odd, as opposed to

(iii) *Bill decided to behave himself.*

Perhaps a more normal interpretation of (i) is one in which Bill makes the decision for a group, not just himself.

[17]Notice that bringing the OPC into the argument structure does nothing more than restate the problem. If we somehow say that dative *give* with an OPC is <τ(to-PP), <τ(VP//NP), <τ(NP), τ(VP)>>>, it certainly is not obvious why the OPC is the next-to-last argument in, while it presumably would be the last argument in when *give* is ditransitive: <τ(VP//NP), <τ(NP), <τ(NP), τ(VP)>>>. And, in any event, the problem of establishing a correspondence between controller and argument in the type structure of the head without recourse to IL representations still remains.

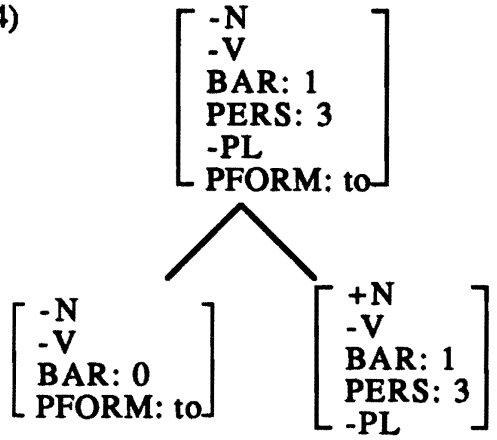
Appendix

I outline here a possible way of making objects of prepositions available as controllers under the usual assumption in GPSG that syntactic control involves feature matching. Suppose we say that the PPs in question involve 'case-marking' prepositions, which are treated in GPSG much as in LFG. In GKPS, case-marking prepositions are specified for a feature PFORM. Dative *to* is [PFORM: to], and we could perhaps treat thematic *with* and *for* as [PFORM: with] and [PFORM: for]. Then PPs form heterocategorial structures which are licensed by the following ID rule, where both the lexical preposition and the NP count as heads.

(83) P^1[PFORM α] → H[SUBCAT α], H^2[+N]

Points where the heads and the mother differ in feature composition due to the ID rule or some feature cooccurrence restriction (FCR) are forgiven by the Head Feature Convention. The symbol 'P' in the rule abbreviates [-N] and [-V], and the lexical head (specified with SUBCAT) must agree with the mother, but the phrasal head is specified [+N] in the rule, thus it will be [+N] and [-V]. Similarly, differences in bar level follow from the rule or a FCR specifying that categories containing SUBCAT are bar-0. Judicious use of feature cooccurrence restrictions will permit appropriate NP head features for person, number and gender to percolate into prepositional categories provided they bear PFORM specification, yielding the tree below. This makes the NP head features accessible for the CAP, though it does not explain why a category mismatch (PP versus NP) is possible between filler and gap.

(84)



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THE UNIVERSALITY OF LEGENDS ?

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1.1 Introduction

The possibility of combining literary theory and anthropological linguistics is an intriguing concept which presents somewhat of a challenge. It is not a novel idea as scholars such as Claude Lévi-Strauss and Alan Dundes have done some interesting work in this area. Intuitively, we recognize a fairytale or a legend regardless of apparent cultural differences. Clearly, there must be some common denominator between a Salish legend and a German legend for us to be able to categorize them both as legends. Knowledge and an account of this phenomenon could prove to benefit our understanding of man's thought processes and his cultural heritage.

I intend to explore the possibility that similarities can be found between legends from two distinct cultures, Salish and German. My method is the morphology of Vladimir Propp's **Morphology of the Folktale**, a work of considerable impact whose influence on the work of both Lévi-Strauss and Dundes (Propp,1968:xi) is well known. I have chosen this method for it attempts to account for a common denominator and has been applied to the literatures of indigenous cultures (Dundes,1964).

Propp, inspired by Goethe's search for the "Urpflanze", believed that "all fairytales are structurally homogeneous" (Erlich,1955:249). However, previous attempts to describe the fairytale had failed because they had based the nature of the tale on the attributes of the characters and, these attributes are infinitely variable. Instead, Propp proposed that the nature of the fairytale is based on what the characters actually do in the tale.[1]

1.2 Methodology

I will provide a brief description of Propp's method of analysis. Propp believed that the first step to a correct historical study is a morphological analysis to discover the prototype of the fairytale (in contrast to Lévi-Strauss who concentrated on discovering the pattern in the text), and this analysis remains separate from social and cultural context. The morphological analysis captures the structure of the text completely independent of content and describes it in terms of functional morphemes which are associative and interdependent. One morpheme develops out of the previous one, and none excludes the others. Therefore, there is a chronologically ordered linear system of morphemes. In addition, Propp proposes that this system will always be identical, based on the belief that any sequence of events is governed by its own laws.

The morpheme is essentially the function of a character in the text (fairytale) which is dependent on two premises. The first is that a function must be defined independent of its actor, and the second is that it cannot be defined removed from the linear context of the text. Apparently, these functions are limited: 31 functions are evident in any given text, although it is not necessary that all be present. To assist in the schematic comparison of structures each function is assigned a symbol and a one-word definition of that particular function, ie. absentation, interdiction, etc.[2] All texts will not contain all

functions, but in order for the text to be regarded as a fairytale, it must contain the function of *villainy/lack*.

Assimilation of morphemes appears to present a complication for Propp's analysis. One function can become more like another in terms of its consequences. For example, one function, *donor test*, can result in two different consequences. Therefore, these functions must each be defined according to their consequences.

The functions of different characters are connected by means of auxiliary elements which are based on the conveyance of information. This information transfer can take various forms. The character can be all-knowing or can be given the information by means of direct notification, finding it out from another character, or by means of the arrival of a character or object. Assimilation and auxiliary elements are minor factors in the analysis, and therefore, I will avoid them in my application of the method.

Characters are introduced in a formalized manner. The donor is always encountered accidentally, the helper is received as a gift, etc. While Propp insists that characters cannot be defined in terms of function, he proposes that they can be defined according to sphere of action. The functions of a tale can be divided into seven spheres of action which correspond to their respective performers, ie. villain, donor, helper, princess or sought for person, dispatcher, hero, and false hero. A character can be involved in only one or several spheres of action and his/her feelings and intentions do not affect the form of a fairytale, although Propp does acknowledge them as a variable element.

The fairytale is divided into various combinations of moves. However the term move is not defined in Propp's morphology.[3] A move seems to be any development of a tale containing a villainy or a lack, but I am not sure what is intended by his reference to development. For the purposes of my analysis, I have assumed that a move is a linear representation of one character's involvement in the storyline. A character can be involved in the story while another character is involved. Therefore, a type of tiering of moves is established. A move or essentially any element of a tale can generate another tale in its own image, and in Propp's morphology a text can consist of one or more tales, however whether or not these multiple tales can be distinct is not addressed.

1.3 The Nature of a Legend

Having summarized Propp's method of textual analysis, I will attempt to apply it to two culturally distinct legends. Both the fairytale and the legend combine the natural world with the mystical. However, the legend tends to be somewhat more historical and perhaps less colourful than the fairytale. Assuming there is a relationship between the two genres, it is plausible to consider that Propp's morphology could be applied to a legend. The first legend is a classic of folklore and can be found in Grimms' collection of German legends, **Deutsche Sagen**. It is entitled "The Fortresses of Schwarzkopf and Seeburg at Lake Mummel". The legend is an account of a vision which is said to appear around the area of Lake Mummel in the Murg valley on Fridays at midnight.

1.3.1 The Morphology of "The Fortresses of Schwarzkopf and Seeburg at Lake Mummel"

In this legend twelve knights of Seeburg abduct the twelve sisters of Schwarzkopf, and in turn the knight of Schwarzkopf kidnaps the sister of the knights of Seeburg who becomes his beloved. A battle ensues, and the knight is taken prisoner and is stabbed by each of the twelve brothers. The abducted sisters escape and flee with their brother, having removed the daggers and slain their captors, only to be murdered by the brothers'

servant. During a fire that destroys the castle, twelve female figures, each carrying a child, emerge from its walls and jump into Lake Mummel.

An act of villainy is apparent in the abduction of the knight's twelve sisters. Therefore, the function of *villainy 1 - the villain abducts a person* is fulfilled. There is no apparent preparatory part of the legend, for it begins with the actual movement of the tale, the complication.

A counteraction develops from this complication; the knight retaliates against the brothers and takes their sister. I can only consider this action to be a counteraction if the hero, the knight, is a *seeker* in search of his sisters. However, a complication could arise if I do not consider that the act of retaliation is a sign of the knight's *intention* to save his sisters, for the criteria for this function are not exact.

At this point I feel it necessary to take the motivations of the hero into account. The knight could feasibly want to provoke a battle with the brothers in order to overthrow them and free his sisters. But this type of rationale directly opposes the basic tenant of Propp's analysis; content cannot be considered. Regardless of this violation, I will consider the function of *consent to counteraction* to be fulfilled by the act of retaliation.

Both the hero and the villain leave their castles and meet elsewhere to engage in battle. The hero leaves home. Therefore, the function of *departure* is fulfilled. Although there is not, in my opinion, any evidence of the *mediation* function in this legend, I will consider the combination of villainy and departure to be the completion of the complication. The battle constitutes the function of *struggle 1 - they fight in an open field* which begins the course of action.

Following the battle, the hero is wounded by the villain; he survives twelve knifings. The function of *branding 1 - a brand is applied to the body* can be described as the wounding of the hero during the struggle. While the knight does not receive these wounds in the course of battle, I believe it is safe to assume that this function is fulfilled because the cause of the brand does not appear to be a determining factor in the analysis.

According to Propp, the narrative reaches its climax in the function of *liquidation 10 - a captive is freed.* In this legend the climax occurs when the sisters escape from their captors. They are freed by their own devices. Therefore, the function of *liquidation* is fulfilled. Propp proposes that this function and that of villainy constitute a pair. Obviously, there is a semantic dependency between these two acts; an escape can not occur without an abduction. However, I am not sure that I agree with Propp's suggestion that the climax occurs at this point. This function signals the resolution to the complication and, unless we consider the resolution to be the highest peak of dramatic tension, the climax cannot occur at this point but before it.[4]

The slaying of the brothers could be considered a form of punishment and thus fulfills this function. But if this is the case, there is a disruption in the linear order of the functions, for the following function is the *return* which should occur long before the punishment of the villain. And in addition, the morphology stipulates that the first villain (in this legend there is only one) is punished only when a battle or pursuit is absent from the story (Propp, 1968:63). Although this action can be considered a function it cannot be included in this analysis because it does not occur where it belongs in the linear order set out in the Morphology.

"Sometimes return has the nature of fleeing" (Propp,1968:56). And this is the case in the fulfillment of this function; the hero along with his sisters flee from the villain's castle.

Determining the function of pursuit poses a difficulty. The hero is pursued in the text by an agent of the villain and is killed by him. However the only appropriate category, *pursuit 6 - the pursuer attempts to kill the hero*, specifies that an *attempt* is made on his life, not the taking of it. Despite this problem, I will consider this function fulfilled.

Essentially, the functions of this legend are then: *villainy*, *counteraction*, *departure*, *struggle*, *branding*, *liquidation*, *return*, and *pursuit* unless of course the child in each of the sister's arms is a *transfiguration* of the hero. *Transfiguration* must then be included as a function (although the occurence does not meet the criteria).

There are only three spheres of action according to the morphology: the hero, the villain, and the princess or sought-for person - here, it is the sisters. The sphere of action of the villain includes villainy, struggle, and pursuit, and the hero's includes only counteraction and departure. Branding is the only function that can be linked to the character of the sought-for person. This association of functions with the three main characters must suffice as any form of comment on the content of the legend.

The moves of this legend work on three tiers; each tier represents the involvement of one character which will be simultaneous with that of another character when they are both involved in the same function. The sisters and the villain represent two moves operating concurrently during the function of *villainy*. The hero is involved with a move that incorporates counteraction, departure, struggle, branding, liquidation, and return while, during this move, the villain's tier occurs simultaneously during departure, struggle, and branding. The final function of *pursuit* involves all three tiers. These tiers of moves combine to form a single tale. Only one tale is apparent in this legend, for there appears to be only one incident of villainy that is required to determine a tale.

1.3.2 The Morphology of "Basket Ogress"

The Salish legend, "Basket Ogress" is a tale which was told by Martin J. Sampson in Swinomish-Skagit in 1977. A group of children went on a picnic and were entrusted to a young boy named Hunchback. Having arrived at Swinomish, they settled to sleep. But while sleeping, they were snatched by the Basket Ogress and taken to her house. On the way there, Hunchback escaped from her basket and ran to the canoe. The Basket Ogress tried to stop him by throwing rocks, but he eluded her and paddled back to Utsallady to tell the parents of the kidnapping. Meanwhile, the children had managed to escape from their captress, having pushed her into the fire. The children found their way back to Swinomish where they were found by Hunchback and the parents.

Being much more complex than the German legend, consisting of one tale, this one combines two tales with a common function of *villainy*, the snatching of the children. Each tale has a preparatory part before this start of the action. The first tale involves a function of *absentation 3 - members of the younger generation absent themselves* fulfilled by the children setting out on a picnic while the second involves an *interdiction* and its paired *violation*. Hunchback is given responsibility for the children and fails to prevent them from being kidnapped. These functions were not evident in the German legend as it did not include this preparatory part.

The action of both tales begins with the villainy and proceeds to the function of *counteraction.* In this tale, this function is fulfilled by Hunchback realizing that he must escape and tell the parents of the Ogress kidnapping the children.

The following function is extremely difficult to determine. Intuitively, the action of Hunchback grabbing at the branch in an attempt to save himself is important to the narrative. However, is this the fulfillment of the function of *the hero's reaction* or of *provision of a magical agent*? The action fails to meet any of the criteria set out by these two functions, but for my purposes, I will consider the branch to have magical properties and *falls into the hands of the hero by chance*, thereby enabling me to categorize this action.

The magical agent enables the hero to escape and reach the canoe, which fulfills the function of *guidance 2 - he travels on the ground or water.* Neither *provision of a magical agent* nor *guidance 2* are found in the German legend. The complication is developed further by means of the functions of *struggle* and *victory.* The Ogress spots Hunchback trying to escape and throws rocks at him, which he manages to dodge. While this action does not involve a fight where both participants take both offensive and defensive actions, there is the element of offense and defense in the actions, 'throwing' and 'dodging'. This struggle and victory do occur in a field-like area by the river, and therefore these function in the same sub-group as those in the German legend.

The complication of this tale is resolved when Hunchback makes his way back to Utsallady, thereby fulfilling the function of *liquidation.* Both this and the German tale have resolved complications. The final function of this tale is the *return*, differing from the German legend, in that there is no corresponding departure, unless I consider Hunchback's escape from the Ogress to be a departure from home. Hunchback returns to Swinomish with the parents, and in this morphology, there is no specification given for this function, saying whether or not the return must be a return home. Therefore, it can be considered a fulfillment of this function.

During the action of Hunchback's tale, the children's tale is taking place. After the act of villainy, the function of *mediation* is fulfilled by the opportunity of freedom presented to the children by the fire. This function can be categorized as such because the children are victimized-heroes as opposed to a seeker-hero like Hunchback.

Similar to the Hunchback's tale, there are actions which may fulfill the functions of *struggle* and *victory* but only if we consider pushing the Ogress into the fire and her resulting death to meet the criteria of these functions. Using the same argument that I used for the struggle in the case of the Hunchback tale, I can assume this function to be fulfilled. The Ogress's death is a victory for the children.

Her death enables them to escape and return to Swinomish and thus, the tale reaches its climax and the complication is resolved. The *liquidation* function is fulfilled, and with this the tale comes to an end.

The Salish legend incorporates the same spheres of action as in the German legend, except that they are distributed among two tales. In the Hunchback tale, the characters that can be associated with the functions are the hero, Hunchback, the villain, Basket Ogress, and the sought-for person, the parents. The spheres of action in the children's tale are the hero, the children, and the same villain.

With regard to moves, this legend appears to be somewhat less complicated than that of the German one. There are two tiers of moves for each of the tales occurring simultaneously. The Hunchback tale incorporates the hero's move, which begins with the interdiction and continues uninterrupted through to the return. At the time of the villainy, the villain's move begins and continues until the provision of a magical agent where it stops to begin again with the struggle and victory. The moves of the villain are the same for the children's tale whose hero's move begins with absentation and becomes simultaneous with the villain's at the point of villainy and stops at mediation. It begins again with the struggle through to the return, which are not concurrent with other moves in the tales.

In comparing the two legends, a few similarities can be found. Both utilize the same spheres of action and some of the associated functions, namely, counteraction, struggle, liquidation, return, and villainy. However, they are organized differently in terms of moves and the number of inherent tales. The function of villainy is common to the legends and thus qualifies them both as a tale.

1.4 Discussion

Using Propp's morphology, I have been able to find a common denominator between these two culturally distinct legends, but I would hesitate to say that all legends have a common element due to limited data. It is then possible to utilize such a method of analysis for cross-cultural study, for with these commonalities of form between legends one could speculate on the reasons for them. One possibility is that, in keeping with Propp's philosophy of fairytales, there is a universal form for all legends or that this common form is an archetype of the collective unconscious (Jung,1959).

While the method is useful for describing why we call a legend a legend, I cannot help but feel that the amount of tedious analysis required in the application of this method far outweighs its usefulness. In addition, there appears to be several problems with this method.

Anatoly Liberman criticizes the assumption that form is constant while the content is variable and notes that Lévi-Strauss questioned the realization of form independent of the performer. The content is an important aspect of the fairytale; if the content were replaced with something else, it would not remain a fairytale (Liberman,1984:xxxi). There does appear to be an interdependence between form and content. Considering that the only required function of a fairytale is an act of villainy, there are many genres of literature which can be considered a fairytale, if content is irrelevant. For example, newspaper articles are often based on acts of villainy. Are we then to consider these as fairytales? I could not consider a news-story about a hostage-taking a fairytale.

Even before the interdependence between form and content can be addressed, the existence of such a distinction in a text should be questioned. The metaphysics of Formalism is based on this distinction between poetic language and non-poetic language. The choice between the two can only be made, affirmed, or registered within language (Adams and Searle,1986:868). Form is then dependent both on language to determine the existence of such a concept and on language for content.

The functions of a tale constitute this form. However, Propp's justification for the concept of function appears to be questionable according to V.N. Toporov. Function is opposed to the concept of motif proposed by Veselovsky in the **Poetics of Plot** where it is considered to be the simple narrative unit. An assumption is made by Propp that this

thesis is correct, enabling him to contrast his function with Veselovsky's minimal unit of a tale, but this assumption may not be accurate (Jackson and Rudy,1985:257-258).

In consideration of the linear sequencing of the functions, it became apparent in the analysis of the German legend that a function could occur out of the proposed order. The punishment of the villain appeared before its place in the morphology. Liberman commented that a function cannot always be definable according to its consequences and its position in the text (Liberman,1984:xxxi). Clearly, an example of this is evident in my analysis.

In addition, the purpose of organizing functions into moves is questionable, and Propp not only fails to define the move, but he also fails to evaluate it. It appears to be a arbitrary process of little value.

Wilfred Cude has stated that the scientific methods of empirical investigation could be adapted to criticism and prove to be of benefit (Cude,1984:16). Propp's method is analytic and assumes that there is an absolute truth, namely the universal form of the fairytale, and it is clearly an example of a scientific method applied to literature. By this method, the functions of the tale can apparently be absolutely determined. However, there have been many cases throughout my analysis of the legends where the determination of the functions is not an absolute process, but rather an extremely arbitrary one. For example, in the Salish legend, the branch could be a donor, a helper or neither. A case that directly affects the determination of a tale would be the function of villainy. If I were of the opinion that the kidnapping of the twelve sisters represented a good act for whatever reason, then this action would fulfill a different function from villainy, therefore eliminating the one element required to determine a tale. The arbitrariness of this method appears to be a serious problem.

Being analytic in nature, this method fails to provide any evaluation of its object of study. In addition, it does not take into consideration the reader's or the author's contributions to the text. Propp's method "brackets off the human subject" (Eagleton,1983:112). To acknowledge the reader's contribution is a realization of arbitrariness.

According to Peter Steiner, literary theory was independent and prior to its history for the Formalists (Steiner,1984:97). For Propp, the synchronic determination of the fairytale's prototype was primary. After it was determined, its history could perhaps be examined. However, content is variable and is sensitive to both synchronic and diachronic change. And as I have previously mentioned, form and content are interdependent. Indirectly, then, form is affected by historical change. For example, if you take two historically distinct fairytales of the same form (assuming for the moment that this could occur) and add the variable of content to each of them, the sum would be two distinct fairytales. Therefore, Propp's assumption that such a universal could exist is called into question.

As I have mentioned earlier, Propp's method is useful for expressing the obvious. However, it is plagued with problems. The arbitrary nature of the analysis and isolation of form from context, text from the human subject and also from history are only a few and far outweigh the benefits of the morphology.

NOTES

[1] Propp was considered an early Russian Formalist. This movement was a response to the historical, sociological and philological approaches current in Russian literary criticism in the first decade of the 1900's. The Formalist's methods attempted to reveal the human content of art by studying its formal properties not assuming form and content to be separable (this concentration on form distinguished them from the Structuralists). By being made aware of the form of art, the reader becomes 'defamiliarized' to it and thus, his/her perceptions become renewed. This was the key device of the Formalists.

[2] An elaboration of each of the 31 functions can be found in Propp's **Morphology of the Folktale**, pp.26-64.

[3] Descriptions of these various move combinations can be found in Propp's **Morphology of the Folktale**, pp.92-96.

[4] I must mention here that the version of Propp's morphology that I am using is a translation and considering that translations can never equal the original, some definitions and proposals like that of the placement of the narrative's climax may not be accurate.

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TOWARD AN ANALYSIS OF MANDARIN REDUPLICATION[1]

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1. INTRODUCTION

Although a number of treatments of Mandarin grammar have discussed the phenomenon of reduplication in the language, including the well-known and comprehensive works by Chao (1968) and Li and Thompson (1981), none of these descriptions has attempted explicit formulations of Mandarin reduplication patterns. This paper is an initial step toward such a formulation. The analysis formulated in this paper is couched in the autosegmental framework first proposed by Marantz (1982).

In what follows, this paper is divided into four sections. First, it briefly introduces the Mandarin data on reduplication. This introduction constitutes Section Two. Section Three discusses problems the Mandarin data pose for Marantz' theory. Section Four sets forth an explicit theory of Mandarin reduplication. Finally, some summary remarks are made in Section Five.

2. MANDARIN REDUPLICATION

In Mandarin, reduplication is found in the derivations of verbs, adjectives, nouns and kinship terms.[2] Volitional verbs are reduplicated to derive attenuative forms (1a), descriptive adjectives to derive intensive forms (1b), a set of common nouns to derive repetitive forms (1c), and kinship terms to derive vocative forms (1d)[3].

(1)

	base		reduplicate	
a. Verb/Attenuative				
i)	zou CVG	"walk"	zou-zou	"take a walk"
ii)	xiang CGVC	"think"	xiang-xiang	"think a bit"
b. Adjective/Intensive				
i)	hong CVC	"red"	hong-hong (de)	"very red"
ii)	yuan CGVC	"far"	yuan-yuan (de)	"very far"
c. Noun/Repetitive				
i)	ren CVC	"human"	ren-ren	"everybody"
ii)	tian CGVC	"day"	tian-tian	"every day"

d. Kinship/Vocative				
i)	jie	"older sister"	jie-jie	"older sister"
	CGV			
ii)	sao	"older sister	sao-sao	"older sister
	CVG	-in-law"		-in-law"
	(G=glide)			

These examples suggest that Mandarin reduplication is a simple, straight forward process in all of these four categories since all involve the same kind of total reduplication in the same fashion. The total picture, however, is more complex. It should be pointed out that the above examples all involve one syllable bases[4]. The apparent identical reduplicative pattern disappears when the base contains two syllables.

(2)	base	reduplicate	
a. Verb/Attenuative			
i)	da-sao	da-sao-da-sao	
	"clean up"	"clean up a bit"	
ii)	tao-lun	tao-lun-tao-lun	
	"discuss"	"discuss a bit"	
b. Adjective/Intensive			
i)	luosuo	luo-luo-suo-suo	
	"wordy"	"very wordy"	
ii)	he-qi	he-he-qi-qi	
	"polite"	"very polite"	
c. Noun/Repetitive			
i)	nan-nü	nan-nan-nü-nü	
	"man & woman"	"everybody"	
ii)	ri-yie	ri-ri-yie-yie	
	"day & night"	"all the time"	
d. Kinship/Vocative			
i)	bo-mu	*bo-mu-bo-mu	*bo-bo-mu-mu
	"wife of father's older brother"		
ii)	yi-fu	*yi-fu-yi-fu	*yi-yi-fu-fu
	"husband of mother's sister"		

When the base contains two syllables, syllable 1 and syllable 2, the reduplicated form contains syllables 1212 in verbs (2a) but 1122 in adjectives and nouns (2b and c). In vocative forms, reduplication of dissyllabic stems is not possible (2d).

While all the above examples are instances of total reduplication, one can also find partial reduplication in Mandarin such as the following cases:

(3)		base	reduplicate
	a.	buqing-chu "notclear"	bu-qing-bu-chu "very blurring"
	b.	youtiao-li "organized"	you-tiao-you-li "very much organized"

Notice that in (3) the base is no longer limited to the domain of a single morpheme nor even to a single word. Rather, it is a phrase of some kind, AP in (3a) and VP in (3b). This raises a serious problem for the current reduplication theory by Marantz (1982) and McCarthy and Prince (1986), which are addressed in the next section (along with some other problems).

3. THE PROBLEMS

The first problem lies in the characterization of the reduplicative morpheme. For Marantz, each reduplicative morpheme typically has one canonical pattern which can be characterized by some kind of a template (or skeleton). Such a treatment has difficulty handling Mandarin data because no single template can be identified for any of the four reduplicative morphemes in (1) and (2). For instance, the intensive morpheme cannot be characterized in terms of a syllable template, because it varies between one syllable (1b) and two (2b), depending on the form of the base to which it attaches. Neither can the intensive morpheme be characterized in terms of a morpheme template, for it contains one morpheme in (1b) and (2b-i), but two in (2b-ii). The unit of a word cannot serve as the template for the intensive morpheme either. In the first place, Mandarin words of more than two syllables never undergo total reduplication. There is no form *gao-gao-jing-jing-jian-jian derivable from gao-jing-jian (highly advanced; literally: high-essential-summit), etc. Furthermore, the highest level of a reduplication domain in Marantz is no larger than a morpheme; a word domain does not exist.

Another problem with current reduplication theory concerns the phenomenon of discontinuous morphemes such as occur in the intensive reduplication. Recall that Mandarin intensive reduplication involves the following process of syllable repetition (cf. (2b)):

(4) 1 2 → 1 1 2 2

In (4) either the underlined or the non-underlined numerals to the right of the arrow can be regarded as the reduplicative affix while the other part is regarded as the base. If reduplication is considered to be an affixation process, it would be necessary to decide whether Mandarin reduplication involves prefixation or suffixation. In view of a unified treatment of all Mandarin reduplication cases which will become clear later in this paper, it is assumed that the process involves prefixation rather than suffixation. Either way, however, the resulting reduplicative affix is discontinuous. Discontinuous affixes are handled neither by Marantz (1982) nor by McCarthy and Prince (1986).

A third problem concerns the possible domain of reduplication. Marantz' theory, which handles reduplication domains no larger than a morpheme, seems to be too restrictive for Mandarin cases such as shown in (3)[5]. To account for these formations, Marantz' theory has to extend the domain of reduplication to the unit of the syntactic phrase[6].

4. TOWARD AN ANALYSIS

4.1. The Issue of the Affixation Process

Reduplication is an affixation process. This point is expressed explicitly in the two outstanding articles referred to above, namely those of Marantz (1982) and McCarthy and Prince (1986). However, in neither of these two articles do the authors devote much space to accounting for the affixation itself.

Both theories recognize three major steps in the derivation of new words via reduplication. These are affixation of a phonologically underspecified affix to the stem, copying of the rest of the tiers of the stem over the underspecified affix, and association between the affixed and the copied material. However, while much argument and discussion are devoted to issues concerning the copying and association processes (as well as the matter of the possible make-up of the affixes), relatively little is said about the first step, the process of attaching the affix to the stem.

The neglect of affixation as a process in these two articles seems to indicate that both models implicitly assume that there is no difference between the manner of attaching a reduplicative morpheme to the base and the way a normal (i.e. non-reduplicative) affix is attached to a stem. Such an assumption does not, however, seem well founded. Much evidence shows that the two may be different in a non-trivial way.

For instance, affixation in reduplication can be phonologically conditioned while phonological conditioning is not usually found in normal affixation. McCarthy and Prince (1986) argue with evidence from several languages that the locus of some reduplicative affixes is decided by the phonological environment. In Chamorro, they observe, the locus of the affix in continuative reduplication is before a main-stressed foot, while in Afar, the locus for the intensive reduplicative affix is before a final syllable. Another case is discussed by Broselow (1983) for Interior Salish. According to Broselow, "the diminutive in the Interior Salish languages is subcategorized to occur before a stressed syllable rather than before a stem" (p.345). She thus maintains that the infixing reduplication of the language is "the attachment of a morpheme to a phonological constituent rather than a morphological constituent" (p.345). Finally, as is argued later in this paper, the manner of Mandarin reduplication is actually governed by a phonological rule as well. In sum, all the reduplication processes mentioned above make crucial reference to some phonological information or are constrained by it, while non-reduplicative affixation processes in each of these languages do not necessarily refer to the same information or obey the same constraints.

It follows, then, that the process of attaching an affix to a stem can be quite different in reduplication from that in normal affixation. An adequate theory of reduplication should provide an analysis which accounts for this difference.

4.2. A Modular Theory of Affixation

The addition of a reduplicative affix to the base may be different from the attachment of normal affixes, and this difference is explained by the fact that the former may be licensed by phonological rather than morphological rules.

Thus, two kinds of affixation processes must be distinguished. One of these processes is generated by a set of context-free rewrite rules of a syntactic nature which makes reference to morphological categories such as stem and root, whereas the other one is licensed by rules of phonological conditioning or requirements which make reference to prosodic categories such as the syllable, the foot, and the prosodic word.

In the former case, the locus of the affix is only determined morphologically, and the shape of the affix is fundamentally independent of that of the base. In the latter case, however, the locus of the affix is phonologically identified, and the shape of the affix is based on the phonological structure of its stem. Normal affixation typically belongs to the former kind, but at least a subset of reduplication processes, such as those mentioned in the previous section (i.e. cases in Chamorro and Afar, etc.), belong to the latter.

A typical example of the former kind of affixation is English plural morpheme attachment. There, the morpheme is suffixed to the stem through certain morphological rules of plural word formation. In the course of the affixation, the locus of the affix is morphologically specified, having nothing to do with the phonological representation of the stem. The shape of the plural affix, too, is totally independent of the phonological make-up of the stem[7].

4.3. A Theory of Mandarin Reduplication

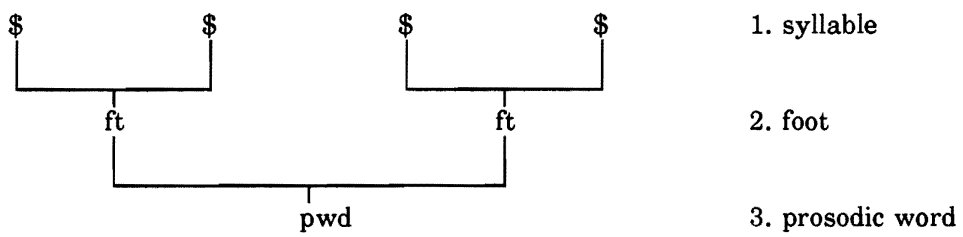
Mandarin reduplication can be understood as a phonological process of prosodic constituent formation. Specifically, the reduplicative affixation process is licensed by a phonological rule which attaches the necessary skeleton to the base to construct some target prosodic constituents. The rule in particular may be stated as follows:

(5) Mandarin Reduplication Rule:

> Construct a higher-level prosodic constituent on the prosodic structure of the base such that the output constitutes a metrical foot (ft) or a prosodic word (pwd).
>
> Or, in a more formal way: $X^n \rightarrow X^{n+1}$,
> where: X^n = one prosodic constituent at level n;
> X^{n+1} = a foot or a prosodic word

As rule (5) implies, two prosodic constituents are observed which serve as the target constituents to be formed in Mandarin reduplication; namely, the foot, defined as a unit of two syllables, and the prosodic word, defined as a unit of two feet or a unit of four syllables. Thus the prosodic structure of Mandarin has at least three levels, the syllable ($), the foot (ft) and the prosodic word (pwd).

(6) Mandarin Prosodic Structure



The existence of these prosodic constituents in Mandarin is empirically supported by other independent observations. For example, the target template of the Mandarin vocative form is a unit of a foot (7a). The same foot template is found in other Mandarin word formation processes (7b) as well.

(7) the prosodic foot

a. Vocative forms

i) on the name "Lin Hua"

1)	Lin Hua	4)	*Lin
2)	Xiao/Lao Lin "little/old Lin"	5)	*Hua
3)	Hua Hua		

ii) on the name "Chen Shu-Zhen"

1)	Shu-Zhen	5)	*Chen
2)	Xiao/Lao Chen "little/old Chen"	6)	*Shu
3)	Ah Zhen	7)	*Zhen
4)	Zhen-Zhen		

iii) on the name "Huang-pu Yi-Jun"

1)	Huang-pu	4)	*Xiao/Lao Huang-pu
2)	Yi-Jun	5)	*Yi
3)	Jun-Jun	6)	*Jun

b. abbreviation

	base	abbreviated
i)	geerbaqiaofu "Gorbachev"	gerba "Gorbachev"
ii)	weiduoliya da-xue "University of Victoria"	wei-da "UVic"
iii)	zhong-guo gong-chan-dang "Communist Party of China"	zhong-gong "CPC"

The examples in (7b) show some very common word formation processes in Mandarin which shorten a name (proper or common) of almost any length to a foot, that is, to two syllables. In particular, (7bi) illustrates truncation, while (7bii & iii) are a mnemonic for the acronym formed by a process similar to that of English. (7a), on the other hand, contains three actually occurring names of Chinese people having two, three or four syllables[8]. Note that the vocative forms of these names (used in everyday and neutrally informal style) invariably contain a foot in each case regardless of the length of the underlying form.

It becomes clear here why kinship terms do not reduplicate to derive vocative forms when the base is dissyllabic (see 2d). It is because the vocative form is constrained by a specific template which is the foot. Once the base is the size of a foot, the target is already achieved and thus no reduplication occurs.

As for the existence of the four-syllable unit—the prosodic word, there are numerous Mandarin words, generally referred to as "four-character idioms", which provide abundant evidence. A few such words are given in (8) below together with their glosses, syllable structures and rough syntactic patterns.

(8) the prosodic word

a.	huan-tian-xi-di $ $ $ $	"overjoyed; literally, happy sky happy earth" syntactic pattern: [A N A N]$_{NP}$
c.	da-cheng-yi-pian $ $ $ $	"merge with; literally, beat into one piece" syntactic pattern: [V Prep Num N]$_{VP}$
d.	fen-dao-yang-biao $ $ $ $	"part company; literally, part route wave whip" syntactic pattern: [V N V N]$_{VP}$
e.	xiong-you-cheng-zhu $ $ $ $	"very confident; literally, bosom has finished bamboo" syntactic pattern: [N V A N]$_{S}$

Having confirmed the existence of the two prosodic constituents discussed above, the foot and the prosodic word, the operation of the reduplication rule in (5) is now considered. It is interesting to see that this simple rule generates all and only the actually occurring reduplication processes in Mandarin.

First, it correctly predicts that only a string of three or fewer syllables serves as the base for reduplication. This is due to the fact that a base of more than three syllables, if any of its components at any level of the phonological representation is reduplicated, yields a word which exceeds the size of a prosodic word—the maximal size of a licit reduplicated word, as stipulated in rule (5).

This rule also correctly predicts that, while a base of one or two syllables may undergo total reduplication, no total reduplication occurs on a base composed of three or more syllables because of the maximal size restriction. It also correctly predicts that a base of two syllables does not undergo partial reduplication since the result would not be a licit prosodic constituent of a reduplicated word by rule (5).

A further advantage of this phonologically based reduplication theory is that it avoids the difficulty a purely morphologically based reduplication theory faces in Mandarin. It ignores the internal syntactic structure of the base and thus accounts for unusual kinds of reduplication where the base is a phrase rather than a morpheme or a word. This approach to word formation based on phonological rules provides a way of accounting for some post-syntactic word formation processes. In such processes, the syntactic relations among the components are less crucial, since all that matters to the word-formation rule is the phonological representation of the relevant string.

The present analysis of Mandarin reduplication also solves the problem raised in analysing the discontinuous affix. The result of both "syntactic" and "phonological" affixation is the

addition of new material to the base. However, due to the distinction made in the rules that license the affixation, the added material is allowed to realize itself in different ways. In particular, affixation processes generated by morphological rewrite rules always result in the added material being of one whole continuous unit, while those generated by phonological rules can result in added material being "scattered" between the prosodic constituents of the base, even though that material represents a single affixal morpheme.

The theory also avoids the dilemma posed by the contradiction of the "shape-invariant" of a reduplicative morpheme which does, in fact, have variable shape. The phonological approach to affixation allows one to ignore the apparent variation but, at the same time, still be able to characterize the "shape-invariant" in each category. This is accomplished by a formula (stated in 9) which generates each of the "shape-invariants" (Y) in all Mandarin reduplication processes in a principled way.

(9) $Y = X^{n+1} - X^n$

where X^n = the prosodic structure of the base

According to this formula, for any base of the shape X^n, the shape of its reduplicative affix Y is derivable through $X^{n+1} - X^n$. Indeed, by rules (5) and (9), we can not only characterize the shape of the reduplicative morpheme in a precise way but also account for the conditioned variation of the shape of the affixal morpheme.

In what follows, the derivations of Mandarin reduplication will be examined in some detail; not seriously addressed, however, are theoretical issues that obviously exist in the copying process and in the identification of possible shape-invariants of reduplicative morphemes. Instead, the assumptions, principles and techniques made in McCarthy and Prince (1986) are simply followed by and large.

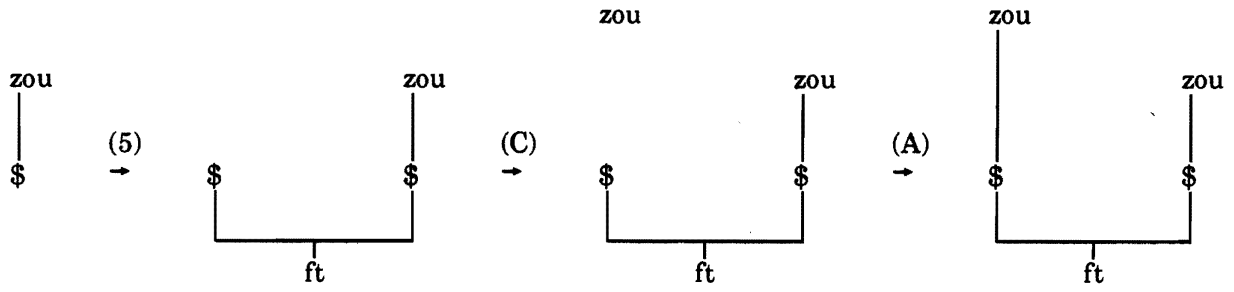
4.4. Exemplifications

4.4.1. The Attenuative Reduplication

As mentioned above, volitional-verb (i.e. attenuative) reduplication causes a serious problem for current reduplication models in that it is impossible to characterize the shape-invariant of the attenuative morpheme by any of the phonological categories defined in these models. This is because two prosodic skeleta rather than one are found for the same morpheme.

Under the theory of affixation purposed here, this problem disappears. The shape-invariant is now defined by a formula (as in 9). Hence, in the case of the monosyllabic verb reduplication, the base X^n = a syllable. According to rule (5), the output of the reduplication should have the skeleton X^{n+1} = foot. And, thus the reduplicative template is Y = foot - syllable = syllable. Following the assumption above that Mandarin reduplication involves prefixation, one can represent the derivational process of reduplication of the monosyllabic verbs like <u>zou</u> (walk, 1a-i) as follows:

(10)

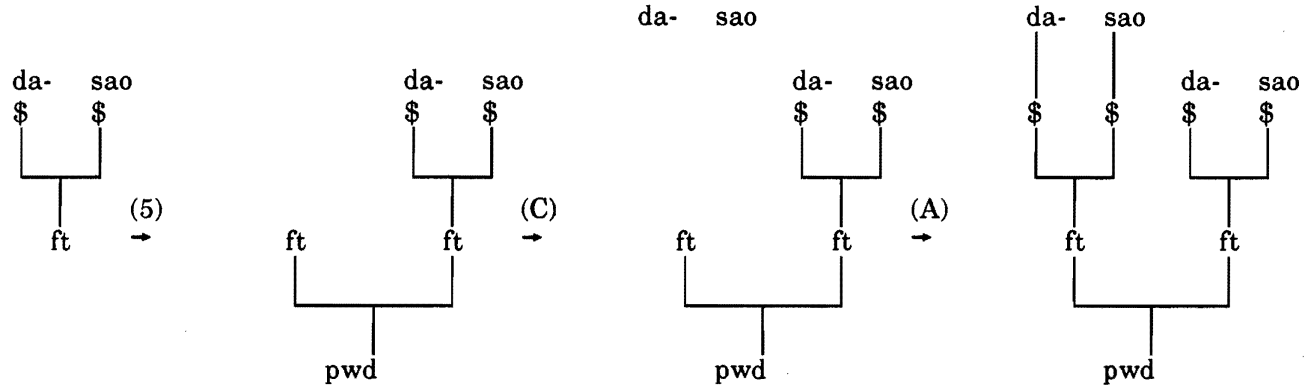


→ zouzou

(C) = Copying
(A) = Association (L→R)

A similar process applies to verbs of two syllables (or one foot). The base X^n is then be X^n = foot; the anticipated result of the reduplication is X^{n+1} = pwd; and the prefixing skeleton can be derived as Y = pwd - foot = foot. See the derivation of da-sao (to clean, 2a-i) as in (11).

(11)



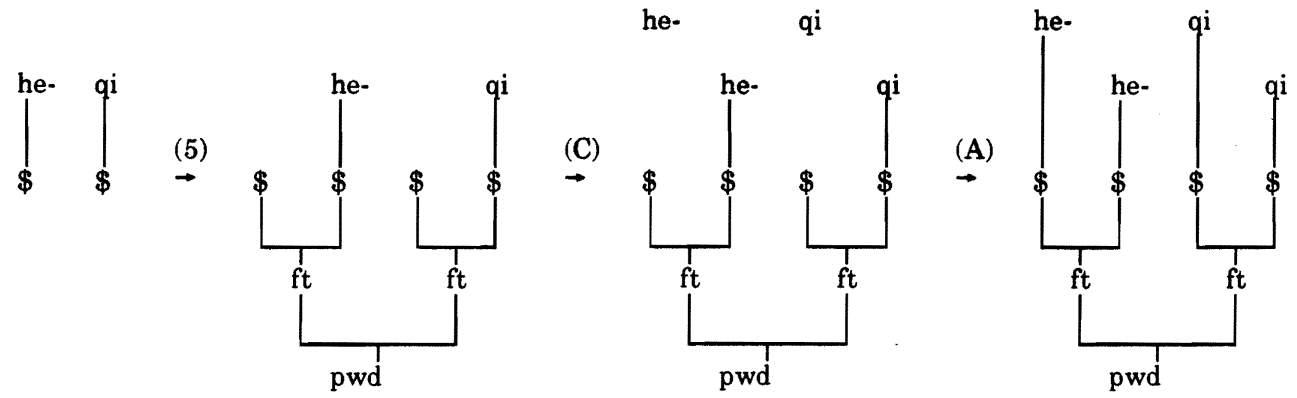
→ dasaodasao

4.4.2. The Intensive and Repetitive Reduplication

The derivation process in intensive (or repetitive) reduplication is essentially the same as that in attenuative reduplication except that the locality of the reduplicative morpheme in the former is different in a predictable way from that in the latter when the base is a dissyllabic word.

It was noted previously that the discontinuous morpheme in dissyllabic adjective reduplication causes difficulty for current reduplication theory, but this difficulty disappears in the phonological account of affixation processes presented here. Moreover, what appears to be a fundamental difference between dissyllabic verb and dissyllabic adjective reduplication is reduced to a trivial difference in their underlying representation. Compare the URs of (11) and (12). The latter demonstrates the derivation of the descriptive adjective he-qi (polite) from (2b-ii).

(12)



→ heheqiqi

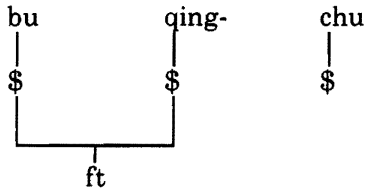
As shown in (12), the difference between dissyllabic verb and adjective reduplication is attributable to the difference in their underlying prosodic structures. It is a foot in the former and two individual syllables in the latter. In other words, the difference can be accounted for by the fact that the reduplication rule applies at the prosodic level of the syllable in intensive reduplication but at the prosodic word level in attenuative reduplication.

Thus, all reduplication processes illustrated in (1) and (2) are but one single process, namely, the process of prosodic constituent formation as formalized in (5).

4.4.3. Other Kinds of Reduplication

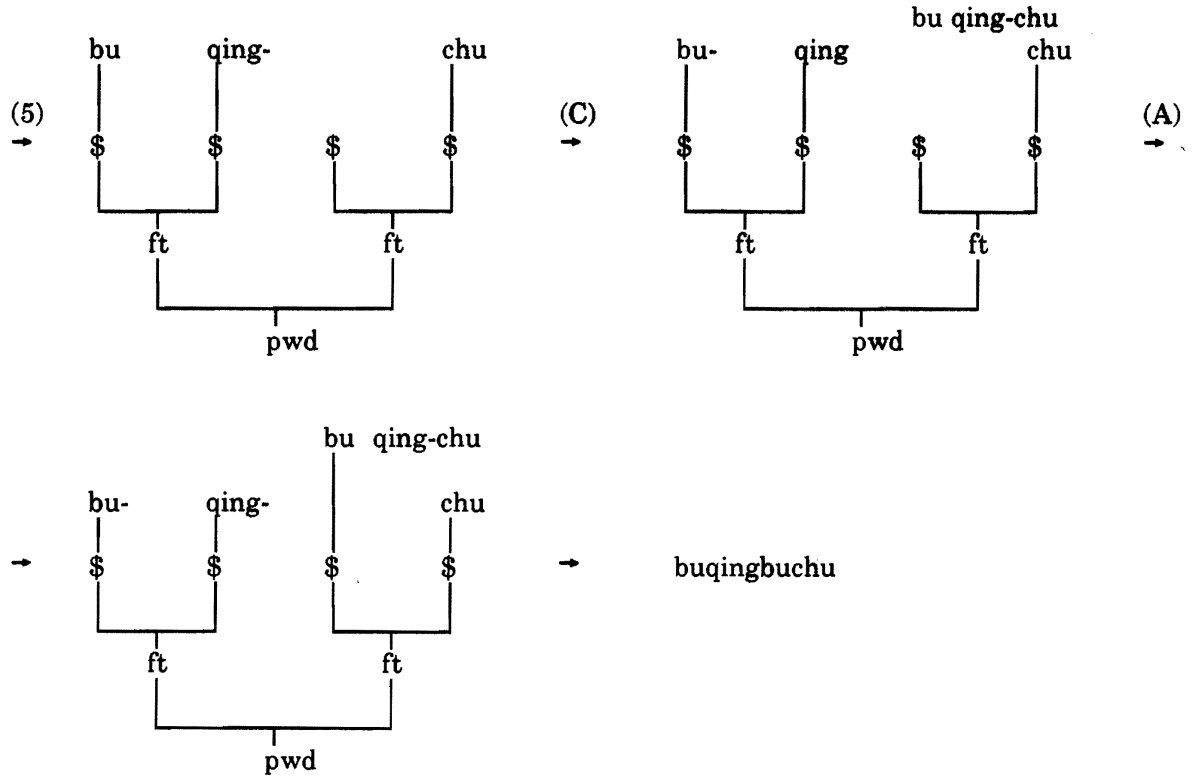
Following Selkirk (1984), the assumption is made that the prosodic structure of a phrase or a sentence is somehow derived from its syntactic structure.[9] In addition, it is assumed that at some level of derivation, the prosodic structure for bu qing-chu (3a) is as follows.[10]

(13)



And the derivational process from this underlying structure is shown in (14).

(14)



5. SUMMARY

This paper has proposed a unified analysis for Mandarin reduplication processes. While in the traditional framework, several separate rules are needed to account for the data, this paper has shown that all these morphological processes are accountable in a single rule, a rule which stipulates that two target prosodic constituents be formed on the base. These target constituents are identified as the unit of two syllables (the foot) and the unit of two feet (the prosodic word).

This paper also argues for a distinction to be made between two types of affixation rules. In one the rules are context-free rewrite rules of a syntactic nature which make reference to such morphological categories as stem and root; in the other the rules are of a phonological nature making reference to prosodic categories and structures. This distinction provides a solution to such problem areas as discontinuous morphemes, morphological processes on domains larger than a word, and reduplicative affixes which have systematically variable shapes.

NOTES

1 The author wishes to thank Dr Barry Carlson for his unfailing help and support throughout the writing of this paper. Special thanks are due to Dr Thom Hess for his careful reading of this paper, generous assistance and very helpful comments. The author is also grateful to Dr James Arthurs who has read the paper and provided assistance.

2 Among the four reduplication processes, the attenuative and the intensive are very productive, while the repetitive and vocative are less so.

3 Although Chinese is a tone language, tonal information is not provided in the illustrations that follow, due to editorial complexity. In any event, tonal information is not crucial to the present discussion of Mandarin reduplication.

4 These monosyllabic bases are also monomorphemic. In fact, the vast majority of Chinese morphemes are monosyllabic.

5 It should be pointed out that McCarthy and Prince's (1986) account of affixation to a prosodic unit does not help here either, since the affixed syllable is not adjacent to the syllable it duplicates. The only apparent hypothesis is that the cases here involve the copying of the total base and then left to right association.

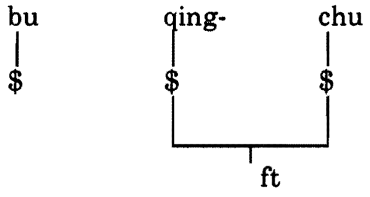
6 What is likely involved here is post-syntactic word formation, a phenomenon that has been discussed in several studies such as Shibatani & Kageyawa (1988) and Zwicky (1983).

7 By shape of the plural affix is meant the affix in its single underlying representation. The three different allophones of the morpheme are the result of an assimilation process which happens AFTER the affixation process.

8 It is rare, however, for a Chinese name to contain more than three syllables.

9 Unfortunately, it is not possible to include a discussion of such an approach here, for it would go far beyond the scope and focus of this paper.

10 It seems, rather, that the logical assumption should be the following (see Selkirk, 1984):



However, this configuration would yield the ungrammatical result *bu-bu-qing-chu in the theory presented here. Intuitively, it seems that at least at some level of derivation the prosodic structure should be the one in (13).

It is interesting to point out, though, that even if (13) is abandoned in favour of the present configuration, the present theory still makes correct predictions; that is, bu (not) rather than anything else in the phrase is what gets correctly reduplicated.

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DISCOURSE AND COACHING: MONOLOGUE VERSUS DIALOGUE[1]

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1. INTRODUCTION

Perhaps the simplest and most important variation in discourse is the difference between a monologue and a dialogue. The present study compared the effects of coaching members of precision skating teams using a monologue to coaching using a dialogue. The monologue was maintained by not permitting questions or comments from the students, contrasted to the dialogue where students were encouraged to initiate questions and comments.

From several points of view a dialogue is thought to be a better way of providing information than a noninteractive monologue. Linguists indicate that cohesion in discourse is a likely result of question/answer pairs (cf., Schiffrin, 1987). The message that is more cohesive, we might suppose, has a greater chance of being received and understood. Also, sociolinguistic considerations suggest that interactive discourse helps to convey information, and "exchange (of questions and answers) is...the minimum unit of interaction" (Sinclair, 1980); of course, exchange in the form of questions and comments does not occur during a monologue. Educators recognize that "the classroom process is interactive discussion...(and that)...student questions come before teacher questions in the learning process" (pp. 7 & 8, Dillon, 1988). They refer to classical teachers-philosophers, such as, Socrates and Aristotle, who emphasized the role of questions in the learning process. While the emphasis of pedagogical writers has been on the question-asking strategies of teachers and the learning process, the importance of students questions and the discourse constraints that are involved have also been a major concern. The notions just mentioned involve students in a classroom more than skaters on an ice rink, but it is likely that they would also apply to the acquisition of a variety of athletic abilities and team skills.

During the Second World War Kurt Lewin found that a dialogue was more persuasive in having wives and mothers serve their families unrationed beef hearts, sweetbreads, and kidneys than a monologue (Bavelas, A., Festinger, L., Woodward, P., & Zander, A., cited in Wheeler, 1970). The monologue was a lecture given by a female nutritionist and the dialogue was lead by Alex Bavelas. Ladd Wheeler (1970) has pointed out that the difference between the monologue and dialogue may have been due to the charm of Alex Bavelas,

who became famous not only as a social psychologist but also as a facilitator of small groups, rather than the greater persuasiveness of the dialogue. However, later studies (Lewin, 1947) showed the greater effectiveness of the dialogue over the monologue when both were carried out by the same person.

The effects of communication structure on determining leaders, efficiency, and morale have been examined in a number of experimental studies (cf., Shaw, 1964) with the Bavelas (1950) originating the work. The findings with an information-gathering task demonstrated that the structures which permitted more participation in the communication process were less efficient but had higher morale than the more centralized communication structures which permitted less participation. The implication being that monologues, which permit less or no interaction compared to dialogues, would gain efficiency in performance but lose the satisfaction of the members.

Leadership style is another consideration when examining the effects of one versus two-sided communications. The coaches who use a monologue can be described as using a more autocratic style in contrast to the democratic style of those who involve their team members in a dialogue.

The study of autocratic and democratic styles of leadership was another interest of Kurt Lewin (Lewin, Lippitt, and White, 1939). Groups of eleven-year-old boys were formed into clubs and presented with different leadership styles. An autocratic leader used mainly a monologue in his presentation to the boys, giving them orders and describing his decisions for the group. The democratic leader engaged the boys in a dialogue with discussions leading to group decisions. Morale was higher in the democratic group than in the autocratic group, and while the productivity of the autocratic group was higher than the democratic group when the leader was present, it was essentially nonexistent when the leader was absent, whereas the democratic group was very productive when the leader was away.

It takes a lot of inference but one way of interpreting the work with the celebrated contingency model of leadership (Fiedler, 1971, 1978, Peters, Hartke, and Pohlman, 1985) is that the task-oriented style is autocratic and likely to employ a monologue while the relationship or person-oriented style is democratic and likely to employ a dialogue. The results from studies of the model indicate that when conditions are either very favourable for the leader or very unfavourable, the task-oriented, autocratic, style was likely to be superior to the democratic style in achieving the productive goals of the group. When conditions were

moderately favourable for the leader, the more person-oriented, democratic, style was best. It seems that the precision skating teams used in the present study most likely fall in the moderately favourable range where it can be inferred that the democratic style would be preferred.

Another leadership theory having suggestions for different effects of a monologue compared to a dialogue is that of Hersey and Blanchard (1969, 1982) who argue that the influence of a "telling" or monologue style versus a "participating" or dialogue style interacts with the maturity of the followers. Their suggestion is that the less mature members benefit more from a monologue than a dialogue but that the more mature members gain more from a dialogue. However, Danielson's (1976, cited in Chelladurai & Carron, 1978) study of leadership in minor hockey found, relatively, the reverse. The participating dialogue was the best for beginners and the telling monologue was relatively better for the "elites" in his study than for the beginners. But it was found that the participating dialogue was, generally, positively related to team effectiveness.

House's (1971) path-goal theory of leadership suggests that a leader is supplemental rather than instrumental to the group members in achieving the goals of the group when the goals of the group have been established and are accepted by the members of the group. Leadership style is hypothesized to interact with the personal characteristics of the members as well as with the task or situation. The autocratic monologue is supposed to be the best for authoritarian personalities and the members with less ability. The democratic dialogue is best for nonauthoritarian personalities and the members with more ability. Also, tasks which require coordination among the members such as team sports are more suited to the monologue where the decisions can be best made by the coach-leader. Implications from path-goal theory to coaching precision skating teams are that an interaction will occur between the monologue-dialogue styles and the ability of the members: the monologue being the best for the Junior skating teams and the dialogue being the best for the Master skating teams. This prediction is also consistent with Hersey and Blanchard's theory that leadership interacts with the maturity of the followers.

Chelladurai and Carron (1978) identified four dimensions of the behaviour of leaders. In addition to autocratic and democratic dimensions they described training behaviour, which is aimed at improving skills and coordination of members activities, and social support, which is characterized by concern for the welfare of individual athletes. They predicted that there would be a difference in the preference for, among other things, different behaviours by those engaged in individual sports

than those engaged in team sports. However, in a study of preferences among a sample of athletes they found that training behaviours were generally preferred. The only difference in the preference for autocratic versus democratic behaviours was that males preferred the autocratic to the democratic style and females preferred the opposite. The implication for the present study is that the democratic style would be preferred because the only participants were women.

It can be seen that the various theoretical approaches and empirical findings suggest that using monologue or dialogue in coaching female precision skating teams of different levels is likely to result in differences in productivity and satisfaction of the team members. However, it is not clear from the review exactly what might be found: Will one style be generally superior for both age levels, which one?, and/or will interactions occur with the levels of the teams? Then too, the finding of no real differences is a possibility.

2. METHOD

2.1 Subjects

The subjects were 33 female members of a figure skating club. Fifteen were members of the club's Junior precision skating team and were between the ages of 14 and 21 years. The other 18 were members of the Masters team and were between the ages of 21 and 47 years.

2.2 Procedure

The study took place on two regular-sized ice surfaces (200' x 90') and in a large banquet room (100' x 31').

The skaters were oriented to the study in a direct manner: They were told a week before the study that two coaching styles would be compared and that they would be experiencing each of them during two separate sessions made up of 4 hours and 20 minutes or six regular practice periods each (four of 50 minutes and two of 30 minutes each).

The first six practice periods were conducted using a monologue with both the Junior and Masters teams. Although this allowed any differences between the monologue and dialogue conditions to be attributed to order effects, it was unrealistic to have the monologue coaching style follow the dialogue. The coach who is also the first author of the study was convinced a monologue style following a dialogue style would completely lack credibility, and it would have been impossible, given her coaching technique, for her to have one-sided communications follow two-sided.

At the beginning of every practice period using the monologue the skaters were told: "For this session you will not be allowed to ask questions or make comments. The only exception to this will be when you cannot hear my instructions in which case you may request that I repeat myself. Also, I will not be accepting any input you may have concerning what we are practising." The practices were conducted for all of the monologue periods using the same lesson structure which the skaters were familiar. (For instance, practices normally included a warm-up, drilling on what had been previously learned during past practices, the learning of new steps and formations as was required by the choreography of the team routine, and a warm-down.) Also, the coach tried not to change anything else, such as, the tone of her voice, facial expressions, the pace of the practices, or the workload goals of the practices. Whenever a skater mistakenly asked an inappropriate question, the coach replied, "I'm sorry but I won't answer that", or ignored the question.

The coach began every practice which used the dialogue by stating: "For this session you will be allowed to ask any question pertaining to precision that you would like to ask. In fact, I encourage you to ask questions. Also, if you would like to make comments or have input into what we are practising, you may contribute ideas as we go along." All the practices were conducted in the same manner as the monologue except for the responses to the questions and comments.

A productivity measure was taken for each session and a coaching-style-satisfaction measure was taken at the end of each monologue condition and at the end of each dialogue condition. Productivity was operationally defined using the following five categories of behaviour:

(1) Productive practice. Skaters were making a sincere attempt to better their performance on a give task.

(2) Productive listening. Skaters were actively listening to the coach and were, therefore, giving her their full attention (i.e., there were no skaters who were grossly distracted by anything, or who were grossly distracting the others).

(3) Productive speaking. One or more of the skaters were constructively speaking either to the coach, or to another skater about the task at hand.

(4) Transitioning. Skaters were purposefully and quickly getting into the task starting positions, and they were hustling back to the coach at the end of the tasks for further instruction.

(5) Unproductive behaviour. Skaters were behaving in such a way that they detracted from: a) successful delivery of instructions, b) successful interactions between the skaters and the coach, or c) successful completion of tasks.

The productivity measure was taken by an independent observer who was trained by the coach to reliably judge the behaviours. The observer was also familiar to the skaters and did not provide a distraction for them. At the start of each practice she familiarized herself with the categories as listed above and, then, sat at rinkside to make and record her observations. Every 10 seconds the observer looked up from her stopwatch, noticed what was happening during the practice and made a tick in a column corresponding to the appropriate category on a recording sheet. Satisfaction was assessed by administering The Coaching Style Satisfaction Questionnaire to each skater after each condition. The questionnaire consisted of eight items each of which the skater responded to on a scale from one to five. To avoid a response set for items 1, 3, 5, and 7 she indicated her satisfaction to dissatisfaction and for items 2, 4, and 6 she indicated her dissatisfaction to satisfaction. The first three items concerned satisfaction with aspects of productivity, i.e., the work the team did, the pace of the sessions, and how directive the coach was. The next three pertained to satisfaction with social fulfilment, i.e., how fulfilled their social needs were, their input, and did the coach have in mind their needs. The seventh item asked in general how satisfied they were with the style of coaching, that is, would they recommend it to another precision skater? The eighth and final item asked whether they preferred the current style of coaching for their future precision practices to which they responded on a five-point scale from (1) "Yes, very much so" to (5) "No, not at all."

3. RESULTS

3.1 Productivity

A total of 3120 productivity counts were recorded for each skating team--Junior and Masters. Similarly, a total of 3120 productivity counts were recorded for each condition--monologue and dialogue. The division of these frequencies into the productive categories is presented in Table 1. All the chi-square tests of differences between the monologue and dialogue were significant. The frequencies in the productive categories which favoured the dialogue were: productive practice (1), x^2 (1, N = 1) = 31.34, $p < .001$ and productive speaking (3) x^2 (1, N = 1) = 210.70, $p < .001$. Productive listening (2) occurred more frequently in the monologue than the dialogue, x^2 (1, N = 1) = 6.71, $p < .01$, and so did transitioning (4), x^2 (1, N = 1) = 11.05, $p < .001$ and unproductive behaviour (5), x^2 (1, N =

1) = 25.90, $p < .001$. The hypothesis that a dialogue will be more productive and less unproductive receives support from three categories, including for coaching purposes, the most important one of increased skating (productive practice). However, more transitioning and listening occurred in the monologue conditions.

Table 1

Team Total Productivity Frequencies and Percents

	Category				
Condition	(1)	(2)	(3)	(4)	(5)
Junior Totals					
Frequency	1463	1180	123	237	118
Percent	46.9	37.8	3.9	7.6	3.8
Masters Totals					
Frequency	1428	1261	120	262	49
Percent	45.8	40.4	3.8	8.4	1.6
Total Monologue					
Frequency	1295	1311	83	302	130
Percent	41.4	42.0	2.6	9.7	4.2
Total Dialogue					
Frequency	1596	1130	160	197	37
Percent	51.2	36.2	5.1	6.3	1.2

Note. Categories: (1) Productive Practice, (2) Productive Listening, (3) Productive Speaking, (4) Transitioning, (5) Unproductive Behaviour.

When the differences between the Junior and Masters teams were examined (see Table 1), the only significance found was that for unproductive behaviour, x^2 (1, $N = 1$) = 28.51, $p < .001$. Table 2 shows that the Junior team was more unproductive than the Masters team in both the monologue and dialogue conditions. These differences were significant; monologue, x^2 (1, $N = 1$) = 7.67, $p < .01$; and dialogue, x^2 (1, $N = 1$) = 9.63, $p < .01$.

The productivity measures recorded for each team in each condition totalled 1560. The frequencies and percents for each team in each condition and in each productive category are presented in Table 2. Considering each team, chi-square comparisons were made for the frequencies in each

category between the monologue and dialogue.

Table 2

Junior and Masters Teams
Productivity Frequencies and Percents

Condition	Category (1)	(2)	(3)	(4)	(5)
Junior Monologue					
Frequency	650	638	47	139	87
Percent	41.7	40.8	3.0	8.9	5.6
Junior Dialogue					
Frequency	813	542	76	98	31
Percent	52.1	34.7	4.9	6.3	2.0
Masters Monologue					
Frequency	645	673	36	163	43
Percent	41.3	43.1	2.3	10.4	2.8
Masters Dialogue					
Frequency	783	588	84	99	6
Percent	50.2	37.7	5.4	6.3	0.4

Note. Categories: (1) Productive Practice, (2) Productive Listening, (3)Productive Speaking, (4) Transitioning, (5) Unproductive Behaviour.

Table 2 shows that both the Junior and Masters teams spent a higher proportion of their total practice time productively practising (skating) in the dialogue condition than they did in the monologue condition. The differences were significant: Junior, x^2 (1, N = 1) = 9.11, $p < .01$; Masters, x^2 (1, N = 1) = 6.68, $p = .01$.

Although table 2 also shows that both teams spent more time productively listening in the monologue conditions than they did in the dialogue conditions, only the Junior team's difference was significant, x^2 (1, N = 1) = 3.91, $p < .05$.

Table 2 indicates that both teams did more productive speaking in the dialogue conditions than in the other, but only the Masters team's difference was significant, x^2 (1, N = 1) = 10.00, $p = .002$.

Also shown is that both teams frequencies of transitions were more in the monologue than dialogue conditions, but, again, only the Masters team's difference was significant, x^2 (1, N = 1) = 7.94, $p = .005$.

Finally, the table shows that both teams had more unproductive behaviour in the monologue than in the dialogue condition. Both the differences were significant: Junior, x^2 (1, N = 1) = 14.08, p < .001, and Masters, x^2 (1, N = 1) = 16.40, p < .001.

3.2 Satisfaction

All questionnaire answers (as assessed using the 5-point continuum) were analyzed using a multivariate analysis of variance for repeated measures (a design of one factor, two levels between and one factor, two levels, within). Individual comparisons for significance of the differences between conditions for each question were made using analysis of variance.

Considering the total satisfaction scores, there was a highly significant overall satisfaction effect in favour of the dialogue coaching condition (M(D) = 3.07) over the monologue coaching condition (M(M) = 2.03), F(1, 28) = 39.11, p <.0001. Examining the means for each condition within each team reveals that for both the Junior team (M(D) = 2.87 and M(M) = 1.87) and the Masters team (M(D) = 3.27 and M(M) = 2.20) there were significant differences in satisfaction between the two coaching styles: Junior, F(1, 28) = 13.13, p = .003 and Masters, F(1, 28) = 34.46, p = .0001.

There was a significant overall team effect in that the Junior team was generally more satisfied (M = 2.73) with both coaching styles than the Masters team (M = 2.37), F(1, 28) = 4.24, p < .05). The interaction between coaching styles and the level of the team was not significant.

Although both the Junior team and the Masters team generally preferred the dialogue, not all the differences between the conditions for each question were significant. The ones which were are as follows:

Junior: questions 4, 5, 7, and 8, F(1, 28) = 7.42, p = .011, F(1, 28) = 17.76, p < .001, F(1, 28) = 15.63, p < .001, and F(1, 28) = 26.36, p < .01, respectively.

Masters: questions 1, 4, 5, 7, and 8, F(1, 28) = 4.46, p = .044, F(1, 28) = 5.90, p = .022, F(1, 28) = 11.35, p = .002, F(1, 28) = 20.73, p < .001 and F(1, 28) = 42.59, p < .001, respectively.

It appears that much of the variance in the overall satisfaction measure is accounted for by questions 1, 4, 5, 7, and 8. These questions, with the exception of question 1 which was the only one that was marginally significant, and only for the Masters group, concerned either satisfaction with social-personal factors or general satisfaction. The

questions which lacked significant differences concerned satisfaction with more task-oriented matters.

4. DISCUSSION AND CONCLUSIONS

The data support the contention derived from past experimental work and from various theories that monologues and dialogues used in coaching can differentially affect the productivity and the satisfaction of precision skating teams. Generally, the more democratic use of a dialogue in coaching encouraged significantly higher productivity and greater satisfaction or morale than did the more autocratic, monologue style for both the Junior and Masters teams.

Also, there was a significant difference between teams in unproductivity in that the Junior team displayed significantly more skylarking than the Masters team, but there were no significant differences between the teams on any other productivity measure. Regarding morale, the Junior team was significantly more satisfied with both coaching styles than was the Masters team--perhaps, illustrating the tendency for a positive relationship between age and cynicism.

All the results could no doubt be dealt with by all the theories, even those which suggest an interaction between age and leadership style because a finding of no interaction could result from at least not having marked individual differences in maturity or ability. Nevertheless, the specific findings are deserving of attention. The productivity that is of most concern to coaches is that of practising what they teach, and it was just this productivity that was the most dramatically influenced by the dialogue over the monologue. The next most dramatic difference was the reduction of unproductive behaviour in the dialogue conditions--and the less the goofing off, the happier the coach. The increased practicing in the dialogue conditions might have left less time for productive speaking, but this did not occur. In fact, there was an increase in productive speaking for both teams, although the increase was significant only for the Masters team. On reflection it seems probable that a dialogue which encourages questions and comments would produce more productive speaking, but it is vital for coaching purposes that this not interfere with practising--which it did not. If anything, it appears that the increase in productive practice and in productive speaking took away from mainly transitioning and unproductive behavior, both of which occurred significantly more frequently in both the Junior and Masters monologue conditions than in the dialogue conditions. It follows that unproductive behaviour would decline with an increase in productive practice. To a lesser extent more practice and speaking resulted in less productive listening. It makes intuitive sense that the

team members would listen less when encouraged to participate in a dialogue.

Although the dialogue had a significant effect on productive listening for the Junior team and not a significant effect for the Masters team, the differences between the two teams in both conditions were not significant. Similarly, although the dialogue produced significantly more productive speaking than the dialogue, and the monologue yielded significantly more transitioning than the dialogue for the Masters team but not the Junior team, the differences between the teams were not significant. Therefore, there is no evidence for any interaction between the style of leadership and the age level of the team.

Also, a lack of interaction ensued in unproductive behaviour. The monologue lead to more unproductive behaviour for both teams than the dialogue. There were significant differences between the teams in each condition, but these only demonstrated that in general the Junior team gave more unproductive behaviour than the Masters rather than an interaction having occurred with coaching styles.

The absence of significant evidence for interaction among style of leadership and level of team does not support the suggestions of Hersey and Blanchard (1969, 1982), Danielson (1976) or House (1971). But, of course, it could be argued that, perhaps, the differences in the styles and/or the levels were not sufficient to yield a significant interaction.

Satisfaction was generally greater--or, it might be said, morale was higher--when the teams were coached with a dialogue than with a monologue. This is certainly consistent with the zeitgeist of this century as well as with the many studies which have shown that people who participate are happier than those who do not or who participate less.

In the dialogue conditions satisfaction may have been generally greater, but it was not uniformly so for all the areas of satisfaction tapped by the questionnaire. The particular satisfaction differences were with satisfaction of social-personal needs, whereas the differences were slight when task-oriented matters were compared. This is not surprising because encouraging questions and comments in a dialogue is showing a concern for an individual's ideas and desires.

A question is raised regarding leadership and discourse style. Because the results of the study are consistent with the theories and findings of past studies regarding autocratic and democratic leadership and because the only

difference in coaching was that of discourse style--dialogue versus monologue, then is the main defining characteristic of an autocratic leader the use of a monologue and that of a democratic leader the use of a dialogue?

Any conclusions must be tempered by the limitations of the study. Order effects could have transpired for both productivity--more experience in the second session--and satisfaction--greater familiarity with the coach and other skaters in the second session. Also, the findings are not readily extendable to males or to individual sports. These affairs are for future research.

Extenuated as above, then, a democratic style of coaching which engages members of a skating team in a dialogue is likely to be better for both morale and productivity than an autocratic style which directs the team by employing a monologue.

NOTE

1. Adapted from Sloat, S. G. (1988). The ability of autocratic and democratic coaching styles to produce differences in productivity and satisfaction for precision skating teams. Honours Thesis, Department of Psychology, University of Victoria.

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