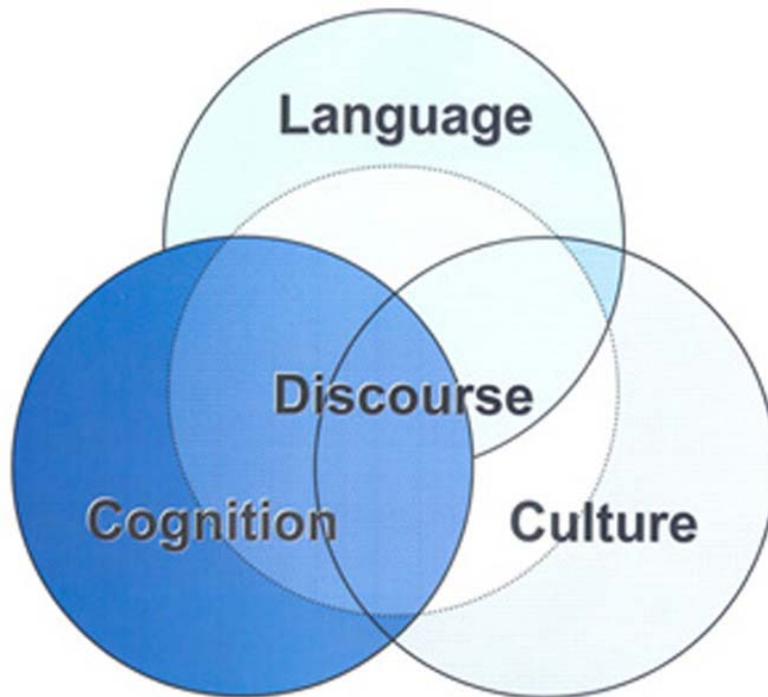


**Proceedings of the Seventh Annual
High Desert Linguistics Society Conference**

November 9-11, 2006
Department of Linguistics
University of New Mexico

Volume 7

Edited by
Evan Ashworth and Daniel Sanford



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Executive Editors: Evan Ashworth and Daniel Sanford
Editors: Melvatha Chee, Brittany Kubacki, Grandon Goertz

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The High Desert Linguistics Society (HDLS) began ten years ago as a coordinated effort of the graduate student body in the Department of Linguistics at the University of New Mexico. The mission statement for HDLS, and more specifically for its biennial conference, was to provide a forum in which those interested in linguistics could meet to exchange ideas, share research, and provide feedback in the spirit of collegiality and support. HDLS has significantly increased in size and scope since that first conference and was proud to continue this tradition with its seventh meeting, held November 9-11, 2006 on the University of New Mexico campus. As a conference organized entirely by graduate students, there are many who have contributed to the overall success of the conference and deserve recognition for their efforts.

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FREQUENCY EFFECTS, SPECIALIZATION OF FORMS, AND SUBJECT EXPRESSION
IN BRAZILIAN PORTUGUESE¹

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University of New Mexico

Traditional analyses of Brazilian Portuguese (henceforth BP) have postulated that pronouns should only be overtly expressed in three instances: to disambiguate the inflectional suffix in the verb, and to disambiguate the referent in discourse, and for emphasis (Cunha and Cintra 1985: 206). Thus, unless one of these constraints is fulfilled, subjects should be left unexpressed in BP. Nevertheless, results show that this view no longer accounts for the patterns that emerge from the data - emphasis, change of referents, and ambiguity of tense/aspect/mood (TAM) do not have an effect on subject expression. This is evidence that subject expression can no longer be accounted for in terms of the morphology of the verb. I propose, on the other hand, that subject expression is part of a long-term change due to frequency effects whereby certain verbs tend to favor subject expression, and the specialization of certain lexical items which adopted a more pragmatic function in discourse.

1. INTRODUCTION.

In the context of functional linguistics, researchers are interested in analyzing language as it is produced by speakers for any purpose their linguistic production may serve. Within such a perspective linguists have moved from conceiving grammar as an abstract arrangement of pre-determined rules, to a more concrete description of human processes that interact in the production, perception, and storage of language. Thus, Bybee contends that, in a theory based on language usage, the grammar has to be defined as “the cognitive organization of one’s experience with language” (2006: 711). In this cognitive perspective, grammar is not seen as a static system, but rather as a structure that emerges from use (Hopper 1998), especially as a result of communicative events that speakers perform on a daily basis. In short, the frequency with which words and structures occur together plays a role in reshaping one’s grammar.

Usage-based linguistics postulates that linguistic items and structures are gradient and highly affected by input – e.g. frequency among others (Bybee 2001: 20). In this sense frequency of input becomes rather important in establishing the relational connections within categories. As frequency of input increases, linguistic items become stronger and easier to access. Therefore, the storage of linguistic structures and lexical items is in part contingent on frequency effects. Storage is conceived not as a list of items but as a network of connections, which are strengthened between the items that share similar properties (Bybee 1985).

When applied to syntax, usage-based linguistics started looking at constructions that have a tighter constituency, e.g. idioms (Kövecses and Szabo 1996; Wray 2000). These constructions are putatively accessed as single units; therefore, they are rendered unanalyzable. Moreover, it

¹ I would like to thank the blind reviewers from HDLS for their invaluable comments. I am also very grateful to the editor for the comments and suggestions on earlier versions of this paper. Finally, I would to thank the audience of the High Desert Linguistic Society VII Conference for their illuminating questions and comments. Any remaining shortcomings are of course my own.

has been observed that not only idioms can be interpreted in this fashion, but any other kinds of fixed expressions that show a frequent rate of co-occurrence of their constituent parts. Bybee and Scheibman (1999), for example, show that the expression *I don't know* is accessed as a whole in certain environments, suggesting storage of the expression as a unit rather than conceiving it as being derived by rule. This is evidenced in part by the fact that the vowel [ə] in *don't* is reduced when it occurs in the construction *I don't know*.

It is under the umbrella of usage-based linguistics that this study intends to account for a much discussed issue in Brazilian Portuguese (henceforth BP), namely subject expression. The working hypothesis that is showcased in this study lies on the premise that discourse is intrinsically connected to the grammar a speaker holds in their minds, that is discourse not only shapes it, but reinforces it as well. As stated earlier, frequency comes to play an important role in the way linguistic structures are stored, perceived, accessed, and produced by speakers. Thus, utterances are to some extent an artifact of the frequency in which they normally occur in discourse. With that in mind it is proposed here that subject expression, as discourse in general, is also affected by frequency. It is hypothesized that certain forms and combinations of subjects and verbs tend to be more frequent in discourse, and the use of expressed or unexpressed subjects is a product of the frequency of co-occurrence of these items. Throughout this study it will be demonstrated that frequency does play a role in the way structures emerge in discourse, consequently affecting the variability in subject expression found in BP.

A number of studies have shown that Brazilian Portuguese is changing and is losing its variability in regards to subject expression, as subjects are coming to be obligatorily expressed (Barbosa, Duarte, and Kato 2005; Duarte 2000; Kato 1999, 2000; Monteiro 1994b; Negrão and Viotti 2000). In this data there is a rate of 73% of first person singular (1sg) subject expression as opposed to a comparable data of Colombian Spanish which showed a rate of expression of 1sg of 48% (Travis 2005). Other dialects of Spanish also show considerably lower rates of subject expression for 1sg, namely Los Angeles (42%), Puerto Rico (47%), and Andalucía (50%) (cf. Silva-Corvalán 2001: 166). These lower rates in these Spanish data reinforce the claim that BP is losing its variability of subject expression.

Traditional analyses have proposed that subject expression in BP is determined by emphasis, ambiguity of TAM of main verb, or change of referents (Kato 2000; Monteiro 1990, 1994b). However, statistical analysis of expression of 1sg subjects in discourse reveals that these factors do not have an effect on subject expression. Thus, subject expression can no longer be accounted for in terms of the morphology of the verb.

The analysis established here proposes that subject expression has become the favored pattern for 1sg in BP, and its variability is a result of frequently co-occurring patterns of 1sg subjects and verbs. These patterns can be seen to favor both the emergent pattern, i.e. subject expression, and the more canonical ones, that is, unexpressed subjects.

In the sections that follow I will describe some studies on subject expression in BP and how they have accounted for the change (section 0). In section 0 I will briefly describe the data and methodology used in the study followed by the results of the statistical analysis in section 0. Finally, in section 0, I present the analysis of 1sg subjects in terms of their frequency of occurrence with main verbs. I end this study with some concluding remarks and questions for future studies.

2. SUBJECT EXPRESSION IN BRAZILIAN PORTUGUESE.

Brazilian Portuguese exhibits variable subject expression, that is, pronominal subjects can be either overtly expressed or they can be left unexpressed (Duarte 2000; Monteiro 1994b; Negrão and Viotti 2000). Consider examples (1) and (2) below. The former shows the first person singular subject overtly expressed in the clause, whereas in the latter the speaker needs to rely on the verbal inflectional suffix to retrieve the subject of the clause.

(1) *Expressed*

Ninguém dizia que eu era feia.
 ‘Nobody would say that I was ugly.’
 (Inq. 7:951)

(2) *Unexpressed*

Tenho a memória muito boa,
 ‘(I) have a very good memory.’
 (Inq. 33:908)

According to traditional accounts of the phenomenon in BP, subject expression is a result of the rich paradigm of inflectional verbal suffixes (Duarte 2000; Galves 2000; Kato 1999; Monteiro 1994b; Negrão and Müller 1996; Negrão and Viotti 2000). Other scholars have postulated that the absence of an overt pronoun is the norm, and these pronouns should only occur when there is a need for emphasis, to disambiguate the co-referent of the clause, or in the instance of ambiguous TAM (Cunha and Cintra 1985; Perini 2002).

Kato (1999) suggests that the null subject nature of BP is a result of its rich inflectional paradigm coupled with a rich pronominal system. In languages that allow subjects to be absent, pronouns are coupled with agreement marked on the verb to establish co-referentiality. However, impoverishment of agreement brings about the emergence of weaker pronouns, which in turn tend to be expressed more frequently. The author argues that the change is a result of the resetting of the agreement system of BP, which moved from a set of six-person inflectional suffixes to a set of 4-person inflectional suffixes, thereby inducing different persons of discourse into sharing the same inflectional marking, namely zero agreement as can be seen in Table 1.

TABLE 1. VERBAL AGREEMENT IN BRAZILIAN PORTUGUESE.

		Old system			New system	
1sg	<i>eu</i>	<i>falo</i>	}	<i>eu</i>	<i>falo</i>	
2sg	<i>tu</i>	<i>falas</i>		<i>você</i>	<i>fala</i>	
3sg	<i>ele/a</i>	<i>fala</i>		<i>ele/a</i>	<i>fala</i>	
1pl	<i>nós</i>	<i>falamos</i>		<i>a gente</i>	<i>fala</i>	
				<i>nós</i>	<i>falamos</i>	
2pl	<i>vós</i>	<i>falais</i>	}	<i>vocês</i>	<i>falam</i>	
3pl	<i>eles/as</i>	<i>falam</i>		<i>eles/as</i>	<i>falam</i>	

Duarte (2000), on the other hand, has showed that this paradigm is changing in BP, which seems to be moving toward an obligatory subject language. In her study of subject expression in plays from the 1800's to the early 1990's, she demonstrates the speed with which the language is changing. For example, unexpressed 1sg subjects go from a rate of occurrence of over 80% in 1882 to less than 20% in 1992. Similar changes can be seen for second person singular and plural as well as for first person plural (cf. Zilles 2005 for discussion), and a steady increase in rates of expression for third person singular and plural are also found, but they do not reach the same status of 1sg or 2sg. In short, she shows that traditional accounts have not been able to fully interpret the nature of the change.

Following the initial analysis put forth by Duarte (2000), this paper analyzes the way 1sg subjects come to be realized in Brazilian Portuguese conversation. The contribution of this paper is, therefore, twofold. Firstly, I present results that corroborate the main tenet of usage-based linguistics in which linguistic forms are not a product of rules, but a byproduct of language use (Hopper 1998). Secondly, I demonstrate that subject expression has become the norm for 1sg domain, and the contexts that allow for unexpressed subjects are owed to the frequency with which these subjects tend to co-occur with main verbs. In brief, this is the first study to take into consideration the role of frequency in the distribution of subject expression in BP.

3. DATA AND CODING.

The data used for this study comes from the Corpus of Educated Oral Portuguese from Fortaleza (PORCUFORT) collected by José Lemos Monteiro between the years of 1990 and 1994 (Monteiro 1994a). The corpus consists of three different registers and 500,000 words of which only approximately four hours or roughly 42,000 words of the data from two-party conversations were used. This portion represents the speech of eight speakers (four men and women) as well as three different age groups².

TABLE 2. DISTRIBUTION OF EXPRESSED AND UNEXPRESSED SUBJECTS IN THE DATA.

All 1 st person singular subjects	1,107 –
Exclusions:	84
Total included in statistical analysis:	= 1,023
<i>Expressed subjects</i>	745 (73%)
<i>Unexpressed subjects</i>	278 (27%)

Using the program Monoconc 2.0 (Du Bois 2001), all the tokens of first person singular referents were extracted. The distribution of these tokens between expressed and unexpressed subjects are given in Table 2 above. As can be observed, expressed subjects appear to be the norm with over 70% of all instances of 1sg subjects, whereas unexpressed subjects account for only 27% of the data. Furthermore, from the total of 1,107 tokens, a number of exclusions had to be made. Firstly, all instances in which the speaker did not complete the utterance were excluded as in (3) below, since it is not possible to predict the desinence, i.e. the inflectional suffix, the verb would

² There were three different age groups represented following the division proposed in Monteiro (1994b). Thus, the groups are young (18-35), middle (36-50), and over 50 years of age.

have taken. In addition, non-finite verbs were not considered in the analysis since they seem to behave more like nouns than like verbs (Thompson and Hopper 2001).

- (3) porque eu fiz a minha eu fi/eu me formei aqui pela U.E.CE.... né?
 “because I did my I did/I graduated here at U.E.C.E... right?”
 (Inq. 47:191)

After all the exclusions were made, there was a total of 1,023 tokens that were coded in Excel for the following factors, believed to have an influence in determining subject expression.

3.1 TAM of preceding verb and previous subject. These factor groups will allow for the testing of the hypothesis that adjacent syntactic forms tend to be isomorphic both in the form of their subject as well as in their verbal TAM. Furthermore, traditional analyses have argued that pronominal expression in BP is an outcome of speakers’ intentions to disambiguate the subject of the immediately preceding clause. Thus, the hypothesis at study here is that the subject of the immediately preceding clause may either license an unexpressed mention, supporting the argument of traditional analysis, or prime another expressed mention, which is expected for a change that is more advanced (Cameron 1995; Cameron and Flores-Ferrán 2004).

3.2 Semantics of the main verb. The taxonomy in use here comes from Silveira (2007: 235), which is an adaptation of Dixon’s taxonomy (2005) to suit the Brazilian Portuguese data.

Table 3 below demonstrates the values used in this study along with some examples for each verb type.

TABLE 3. MAIN VERB TYPES.

	Description ³	Examples
Motion	the subject is a Mover	<i>chegar</i> ‘to arrive’, <i>ir</i> ‘to go’, <i>sair</i> ‘to leave’, <i>entrar</i> ‘to enter’
Perception	two core roles: a Perceiver and an Impression	<i>escutar</i> ‘to listen/hear’, <i>ver</i> ‘to see’, <i>olhar</i> ‘to look’
Cognitive	two core roles: a Cogitator and a Thought	<i>achar</i> ‘to think’, <i>saber</i> ‘to know’, <i>entender</i> ‘to understand’
Speech	Speaker, Addressee, and Medium	<i>dizer</i> ‘to say’, <i>falar</i> ‘to speak’, <i>chamar</i> ‘to call’
Relational	establishes a relationship between two states or activities	<i>ser</i> ‘to be’, <i>estar</i> ‘to be’
Possession	two core roles: an Owner and a Possession	<i>ter</i> ‘to have’
Affect	two core roles: an Agent and either a Target or a Manipulator or both	<i>atingir</i> ‘to hit’, <i>chocar</i> ‘to crash’, <i>corrigir</i> ‘to correct’
Giving	three core roles: a Donor, a Gift, and a Recipient	<i>dar</i> ‘to give’
Rest	two core roles: a Rester and maybe a Locus	<i>ficar</i> ‘to stay’, <i>permanecer</i> ‘to rest’
Other	verbs that did not fit in any of the above categories	<i>morrer</i> ‘to die’, <i>fumar</i> ‘to smoke’, <i>vencer</i> ‘to win’, <i>operar</i> ‘to use’

³ The descriptions provided here follow Dixon’s descriptions for each verb type. These descriptions are, in turn, semantically based to capture the relationship between arguments as part of the core meaning of the predicate.

3.3 Frequency of the main verb. This factor group measured the token count based on the sum of tokens from two different corpora, PORCUFORT and LAEL⁴ (Sardinha 2005). The sum is then divided by the sum of the number of words of both corpora. Finally, I multiply the result by ten thousand to obtain the standardized frequency of each verb per ten thousand words. The reasoning behind the application of this factor group lies in the core of usage-based linguistics, namely that forms that constantly occur together tend to occur together often (Bybee 2006). I will attempt to code for two frequency measures here, (a) the overall frequency of a verb in discourse, and (b) the frequency of co-occurrence of a verb and each of the inflectional markings available in BP's system.

3.4 Tense-aspect-mood (TAM) of the main verb. After coding and appropriate collapsing because of similar patterning, four major categories were identified: present, preterit, imperfect, and future⁵. This factor group will allow for ambiguity to be tested. As has been mentioned earlier, traditional accounts have contended that this is one of the factors that promote expressed pronominal referents, whereas unambiguous TAMs tend to trigger unexpressed subjects. It is worth mentioning that only the imperfect shows ambiguity between the 1sng and 3sng persons of speech. Moreover, Naro et al. have found that the marking for first person plural seems to be associated with the preterit and future uses (Naro, Görski, and Fernandes 1999). This finding reinforces the notion that forms that collocate often will co-occur more often.

3.5 Distance from co-referent. This factor group derives from the notion put forth by Givón (1983b; 2001) in that topics that persist longer in discourse tend to become more attenuated in their linguistic form, thus raising the hypothesis that unexpressed subjects would be realizations of more persistent topics. As a starting point, persistence will be measured in terms of clause distance from the first to the last mention of the same referent up to twenty clauses. Thus, (a) a token will receive a value (in number of clauses) attributed to the distance between the first time its referent was mentioned, and (b) the syntactic function of the first mention of the referent will also be captured; Furthermore, it is proposed to account for other factors related to the persistence of referents in discourse. Following the coding system proposed by Givón (1983b), the distance between the token and its previous coreferential will be measured in terms of number of clauses.

3.6 Clause type. Bybee (2002a) argues that main clauses are more innovative, whereas subordinate clauses tend to be more conservative and retain older patterns. Thus, the hypothesis is that main clauses will show a higher rate of expressed subjects than subordinate clauses would. In support of this, Lira (1982) found that relative and adverbial clauses tend to favor pronominal subjects.

⁴ The corpus consists of approximately 3 million words distributed through several registers, namely conversations, public speeches, high school and university lectures, sociolinguistic interviews, and several forms of written genres. The population used for this study comes from the southeastern region in Brazil, and it is very variable as far as level of education.

⁵ Based on this distribution of factors, the imperfect appears as the category that shows ambiguity in terms of inflectional marking. For this particular TAM, all three singular persons take the same forms (e.g., *ia* '(I/s/he/it) was going'). The present, preterit, and the future, on the other hand, show ambiguity in the marking of 2sng/3sng and 2pl/3pl. Thus, a separate factor group is to be created to account for TAM ambiguity per se.

These tokens were then submitted to a variable rule analysis using the program Goldvarb X (Sankoff, Tagliamonte, and Smith 2005). In the next section I discuss the results for the variable rule analysis.

4. RESULTS.

The results of the coding were subject to a multiple regression statistical program (Goldvarb X (Sankoff, Tagliamonte, and Smith 2005)) to determine which factors contribute to a statistically significant effect to the use of expressed 1sg subjects when a set of factors are considered together. **Error! Reference source not found.** shows the factor groups that were selected as significant by the statistical analysis. From the left-hand side, the first column represents each factor group selected as significant and its factors in the order of their probability to the occurrence of an expressed subject (from most probable to least probable). The next column shows the probability of that factor to take an expressed 1sg subject while the adjacent column shows the percentage of occurrence of that specific factor with expressed subjects. The farther above .50 a factor is, the more likely it is to take an expressed subject, whereas the farther below .50 a factor is, the less its likelihood is to take an expressed subject. By way of illustration, verbs of speech show a probability of .80, and they occur 93% of the time with expressed subjects. Moreover, the last column displays the distribution of each factor within the group. Thus, speech verbs account for eleven percent of the data. Finally, the magnitude of effect is determined by subtracting the lowest probability from the highest within a factor group. Thus, the range for the factor group of semantics of main verb is 44, making this group the strongest in determining the occurrence of expressed subjects.

TABLE 4. RESULTS OF THE VARIABLE RULE ANALYSIS OF THE FACTORS THAT CONTRIBUTE TO A SIGNIFICANT EFFECT ON THE DISTRIBUTION OF EXPRESSED SUBJECTS IN BP.

Total N	1023			
% expressed	72.8			
Corrected mean	.791			
		probability	%	% of data
Semantics of the main verb				
<i>speech</i>		.80	93	11
<i>motion</i>		.61	81	8
<i>perception</i>		.52	78	11
<i>relational</i>		.48	74	8
<i>other</i>		.45	70	38
<i>cognition</i>		.36	58	21
	<i>Range</i>	44		
Distance				
<i>2 clauses</i>		.77	89	13
<i>+3 clauses</i>		.50	75	22
<i>1 clause</i>		.48	73	44
<i>3 clauses</i>		.36	58	19
	<i>Range</i>	41		
Clause Type				
<i>Relative</i>		.81	93	12
<i>Subordinate</i>		.65	85	16
<i>Main</i>		.40	66	70
	<i>Range</i>	41		
Preceding subject				
<i>other</i>		.55	77	55
<i>1st person expressed</i>		.52	73	30
<i>1st person unexpressed</i>		.28	51	14
	<i>Range</i>	27		
Polarity				
<i>Affirmative</i>		.53	75	85
<i>Negative</i>		.30	55	14
	<i>Range</i>	23		
TAM of previous verb				
<i>Different</i>		.58	80	48
<i>Same</i>		.42	67	52
	<i>Range</i>	16		

$p = .0001$; log likelihood = - 487.492; chi-square/cell = 1.1486. Factor groups not selected as significant: ambiguity of verb tense and frequency of co-occurrence of first person singular subjects and main verb.

Results demonstrate that change of referents and ambiguity of verb tense do not play as strong a role as believed by traditional analyses in pronominal expression in Brazilian Portuguese⁶. Rather, what can be seen is that the semantics of the main verb as well as clause type appear to have a stronger effect in the distribution. Thus, I postulate that subject expression in this data cannot be interpreted in terms of verbal morphology for 1sg subjects.

It is beyond the scope of the paper to clearly explain each of the phenomena that emerge from the results presented here. However, it is worth mentioning that verbs of speech favor expressed subjects (.80) while verbs of cognition disfavor expressed subjects (.36), thus favoring unexpressed subjects. This can be accounted for as a lexical effect which results from the frequency with which these verbs and these subjects co-occur in discourse (cf. section 0 for further discussion). In addition, motion verbs also show a slight favoring for expressed subjects. This finding can be interpreted as a result of the high frequency of the verb *ir* 'to go', which occurred over a third of times of all tokens of motion verbs (36% or 29/81) of which seventy percent represent expressed subjects, thereby suggesting that these subjects and the verb *ir* 'to go' are strongly represented as a construction in the minds of speakers.

Turning now to the second factor group, distance from the same co-referent was measured in number of clauses away. For instance, one clause away means that the co-referent, i.e. another first person singular subject, is in the immediately preceding clause. It has been found that distance between co-referents plays an important role not only in subject expression, but in the duration a referent is retained in the focus of consciousness of speakers. Givón (1983a; 1983b; 1983c) has shown that the closer a referent is to its co-referent, the more likely it is to be realized in a more attenuated form. In a similar vein, as co-referents become more distant from one another, they tend to be realized in more cumbersome forms, e.g. Noun Phrases. Findings for Spanish have shown a priming effect whereby the subsequent clause tends to show the same verb tense and subject as the preceding clause (cf. Travis 2005; 2007). The results for Spanish are not observed here, instead what it is found is that there is a preference for unexpressed subjects to occur at a distance of three clauses from its co-referent. This is, I suggest, a remnant of its original distribution in BP. Duarte (1993; 2000) shows that unexpressed first person subjects go from a rate of occurrence of over 80% in 1882 to less than 20% in 1992. Thus, these occurrences of unexpressed subjects relatively distant from its co-referent is a result of its older use, constituting one of the last contexts that favor unexpressed 1sg subjects.

In regards to clause type, both relative clauses (.81) and other subordinate clauses (.65) favor the use of expressed subjects. Main clauses show a slight disfavoring of expressed subjects, therefore favoring unexpressed subjects (.40). Interestingly, if expressed subjects are taken to be the innovative forms, the results presented here are mixed. Bybee (2002a) argues that main clauses tend to show more innovative patterns, whereas subordinate clauses are more conservative in nature. This is certainly not the case in this study since subordinate clauses are

⁶ The other factor considered to determine subject expression in BP is emphasis. However, this is a subjective concept, unlikely to be operationalized for statistical analysis. Besides, the rates of subject expression observed in this data (73%) suggest that they should not be regarded as being a product of utterances with emphatic subjects. Thus, it can be assumed that if there is an effect of emphasis in determining whether a 1sg subject is expressed or not, such effect is very weak.

clearly leading the change. However, these results should be examined with caution since both subordinate and relative clauses account for only 30% of the data under study here.

Finally, an effect of the subject of the immediately preceding clause can only be seen when that subject is another unexpressed one. This finding suggests a priming effect whereby an unexpressed first person singular marking is primed by another as in (4) below. However, this finding goes against what traditional accounts of subject expressions have proposed in that expressed subjects are expected to prime unexpressed ones. This is thus a contribution from this data to the body of research.

- (4) fiz trinta anos pedi minha aposentadoria ...
(I) turned thirty years old (I) requested my retirement ...

(Inq. 47:39)

To conclude this section, it can be seen that negative sentences show a favoring for unexpressed subjects (.30) which I will argue to be an artifact of the high degree of co-occurrence of first person singular subjects and certain verbs, namely *saber* ‘to know’ and *achar* ‘to think’ in constructions such as *não sei* ‘(I) don’t know’ and *não acho* ‘I don’t think’ (Silveira 2007). In addition, TAM of previous verb shows an effect similar to those found for Spanish in studies of syntactic or structural priming whereby the same TAM will prime the occurrence of an unexpressed subject, and a different TAM tends to prime an expressed subject (Bock 2005; Cameron 1993, 1994, 1995; Cameron and Flores-Ferrán 2004; Gries 2005; Travis 2005, 2007). I now turn to the analysis of the specialized uses of 1sg subjects and verbs.

5. FREQUENCY EFFECTS AND SPECIALIZATION OF FORMS.

In this section I will argue that certain constructions of 1sg-subject and verbs show variability in terms of subject expression, and this variability can be accounted for in terms of the different discourse functions these constructions exert.

As I have argued allure, Brazilian Portuguese conversation shows a high degree of subjectivity expressed through the use of several constructions of subjects and verbs that frequently occur together in discourse (Silveira 2007). Subjectivity rises as a result of frequently occurring combinations of lexical items that are associated with the standpoint of the speaker about his/her utterance (Finegan 1995; Langacker 1985; Scheibman 2001, 2002; Silveira 2007; Traugott 1997; Traugott and Dasher 2002). The more these forms are used together the tighter their constituency becomes, rendering them unanalyzable (Bybee and Scheibman 1999). So, the working hypothesis here, that constructions, according to the frequency with which they occur with either variable, will show different patterns of expression, stems from the premise that these structures are a representation of the speaker’s experience with language (Bybee 2006: 711).

Linguistic patterns of experience become visible through the frequency with which certain forms are used in language. On this basis, Frequency affects language in two ways: (1) low frequency items/constructions are affected by an emerging pattern more rapidly, and (2) high frequency items/constructions tend to retain the more canonical pattern (Bybee 2002c; Bybee and Thompson 1997). Thus, frequency effects were measured in two ways in this study. First the overall frequency of the main verb was obtained. Secondly, the frequency of co-occurrence between first person singular subjects and main verbs was calculated in terms of the probability of that subject occurring with the verb in place of another subject. Despite the fact that frequency

of co-occurrence was not selected as significant, a closer analysis of the data shows that there is indeed an effect on subject expression. I will turn to it now.

I have argued earlier in this paper that the effect of the semantics of the main verb is the result of a lexical effect. This suggests that there is a link between the rates of occurrence between subjects and main verb. A piece of evidence to support this claim derives from the fact that 67% of the data consists of a total of 20 verb types or 681 tokens, suggesting that the use of first person singular referents is closely tied to the verbal form that follows (Poplack 2001).

Table 5 shows the distribution of these verbs and 1sg subjects.

TABLE 5. DISTRIBUTION OF VERBS THAT MOST CO-OCCUR WITH 1SG REFERENTS.

	Expressed		Unexpressed		Total	
	N		N		N	%
<i>Saber</i> ‘to know’	28		66		94	9.2
<i>Ter</i> ‘to have’	58		23		81	7.9
<i>Fazer</i> ‘to do’	59		17		76	7.4
<i>Achar</i> ‘to think’	61		12		73	7.1
<i>Ser</i> ‘to be’	59		9		68	6.7
<i>Dizer</i> ‘to say’	55		2		57	5.6
<i>Dar</i> ‘to give’	24		6		30	3
<i>Falar</i> ‘to speak’	25		5		30	3
<i>Ir</i> ‘to go’	20		9		29	3
<i>Conhecer</i> ‘to know’	11		9		20	2
<i>Gostar</i> ‘to like’	17		3		20	2
<i>Ver</i> ‘to see’	16		3		19	1.9
<i>Querer</i> ‘to want’	11		7		18	1.8
<i>Passar</i> ‘to pass’	9		4		13	1.3
<i>Ficar</i> ‘to stay’	7		5		12	1.2
<i>Deixar</i> ‘to leave’	6		5		11	1
<i>Vir</i> ‘to come’	3		6		9	<1
<i>Entender</i> ‘to understand’	7		2		9	<1
<i>Sair</i> ‘to leave’	6		1		7	<1
<i>Olhar</i> ‘to look’	4		1		5	<1
Total	486		195		681	67

As can be seen from Table 5 above, the distribution of expressed and unexpressed subjects suggests a degree of formulaicity of one or sometimes both forms. This formulaicity gives rise to recurring patterns of 1sg-subjects and verbs, which are inherently formulaic (Silveira 2007; Wray 2000) or prefabricated (prefabs) (Bybee 2002b), being thus analyzed as one unit. Furthermore, in the remaining 33% of the data we see a rate of 75% of expressed subjects suggesting that these subjects are favored by lower frequency of co-occurrence, reinforcing the claim that expression has become the productive pattern. The more productive a pattern

becomes, the more frequent it becomes (Bybee and Thompson 1997; Krug 1998). In the sections that follow, I discuss the 5 most frequent verbs that most frequently co-occur with 1sg subjects and that show a clear patterning of form and function of subjects and main verbs. These verbs account for approximately thirty-seven percent of the data.

5.1 *Saber* ‘to know’. The verb *saber* ‘to know’ occurs 94 times in the data, of which 70% are unexpressed subjects. This finding suggests that the form is highly grammaticized, subjective, and specialized in form (Silveira 2007: 241). The most frequent constructions here are *sei* ‘(I) know’ and *não sei* ‘(I) don’t know’⁷ accounting for 66% of all tokens of *saber* ‘to know’. These expressions tend to behave as discourse markers in establishing the relationship between the prior and the upcoming discourse as in (5) below, where the form *sei* ‘(I) know’ appears to have an affiliative function.

(5) *saber* → *unexpressed*

A: *Depois eu tenho também dicionário da Bíblia... que até um... um amigo meu o pastor S. de Cuba que me deu...
... aquele... que eu entrevistei*

B: *Sei.*

A: *Que eu fui fazer pesquisa.*

‘A: Besides I also have the Bible dictionary ... which ... a friend of mine, pastor S. Cuba gave it to me...
... that one .. who I interviewed

B: *(I) know*

A: When I was researching’

(inq. 33:732)

In contrast to unexpressed subjects, *saber* ‘to know’ + expressed subjects tend to represent the more canonical meaning expressing the speaker’s knowledge. An example can be seen in examples (6) and (7) below. The latter, for example, diverges farther from the pattern observed so far in that it is realized in the imperfect.

(6) *saber* → *expressed*

Eu sei inglês, eu sei francês, e eu sei alemão.

‘I know English, I know French, and I know German.’

(Inq. 47:211)

(7) *Eu sabia que ele num ia ficar.*

‘I knew he wouldn’t stay.’

(Inq. 34:163)

5.2 *Achar* ‘to think’. Along the same lines of the patterns found for *saber* ‘to know’, *achar* ‘to think’ also shows a different pairing of form and function of its constructions when they occur with either an expressed or unexpressed subject. A case in point is that *achar* + expressed subjects tend to behave as a parenthetical or epistemic marker (Thompson and Mulac 1991) of

⁷ In Silveira (2007: 242) I argue that *não sei* ‘(I) don’t know’ functions very similarly to its English counterpart *I dunno*.

belief and/or certainty as in (8) below. This pattern accounts for 44/73 tokens or sixty percent of all uses of *achar* in the database. This is evidence of its strong correlation of occurrence with expressed 1sg subjects.

(8) *achar* → *expressed*

Eu acho que todo mundo deve além da sua língua deve também carregar uma língua estrangeira.

'I think everyone should learn a foreign language besides their first language.'

(Inq. 47:385)

On the other hand, *achar* 'to think' + unexpressed 1sg subjects does not seem to entail the same degree of certainty as seen in *eu acho* 'I think'. This suggests that this arrangement is closer to the canonical use of the verb, i.e. that of a cognitive verb. Example (9) illustrates this point.

(9) *achar* → *unexpressed*

A Sulamita me disse que mil e quinhentos dá. Mas num sei. Acho que dá porque são dezessete pessoas, né?

'Sulamita said that a thousand and five hundred would be enough. But I don't know. (I) think it would, after all there are seventeen people, right?'

(Inq. 7:685)

5.3 *Dizer* 'to say'. The configuration *dizer* 'to say' + expressed 1sg subjects represents 55/57 tokens (or 97%) of the verb with 1sg subjects in the data. This is strong evidence of the representation of this verb with 1sg subjects in the minds of speakers. What is more, this structure seems to project an opinion about a state of affair to be given by the speaker, illustrated in (10). In other words, it appears to be in the process of becoming subjective, if it has not been subjectified already, to represent the speaker's perspective on the utterance.

(10) *dizer* → *expressed*

Eu digo, varia de governo pra governo.

'I say, it varies with government.'

(Inq. 7:1243)

The remaining two tokens of *dizer* 'to say' occur with unexpressed 1sg subjects. These two tokens convey the actual act of saying something, i.e. the canonical use of the verb. Example (11) illustrates this point. Interestingly, the two tokens of *dizer* 'to say' are not in the present tense as well, which evokes the formulaic nature of the expressed 1sg subjects and this main verb.

(11) *dizer* → *unexpressed*

Agora, o que ia dizer?

'Now, what was (I) going to say?'

(Inq. 47:181)

5.4 *Ser* ‘to be’. The verb *ser* ‘to be’ displays a very interesting pattern of distribution in the data. It occurs 59/68 (or 87%) times with expressed 1sg subjects in the database. Despite such high rates of occurrence between the two forms, a pattern of usage does not emerge in the data. Notwithstanding, as I have argued for *ir* ‘to go’ earlier in the study (see section 0 for discussion), the high rates of realization of expressed subjects and the verb *ser* are an artifact of the high frequency of *ser* ‘to be’ itself. In a similar manner as *ir* ‘to go’, *ser* ‘to be’ obtains its 1sg inflections through suppletion. Although this is not the focus of this paper, it would be worth investigating whether the morphological inflection pattern followed by the verb (regular vs. irregular) has an effect of the spread of subject expression in BP.

In contrast, the configuration *ser* ‘to be’+ 1sg unexpressed shows a pattern of attributive proposition about the speaker that gives extra information about the speaker to the interlocutor as seen in (12) below. However, this pattern accounts for only thirteen percent of the tokens of *ser*, being thus marginal compared to the other frequencies.

- (12) *ser* → unexpressed
Ninguém nunca pegou, fui candidato a vereador duas vezes.
 ‘Nobody ever got it, (I) ran for city deputy twice.’
 (Inq. 34:207)

5.5 *Ter* ‘to have’. The last most frequent verb to form patterns of form and function with 1sg subjects is the verb *ter* ‘to have’, which presents a more complex distribution than the verbs investigated thus far. There are eighty-one instances of this configuration in the data with 71% occurring with 1sg expressed subjects and the remaining 29% occur with unexpressed subjects. The patterns that emerge are not as clear-cut as the ones I have discussed so far. Instead, both forms have different formulaic uses, each with its own niche.

A case in point is the use of *ter* ‘to have’ to express possession. Inalienable possession can be expressed both with *ter* ‘to have’ + 1sg expressed and unexpressed subjects. Nevertheless, the forms become more localized within this function, the former is more pervasive when referring to the speaker’s own age as in (13). Whereas other bodily possessions or emotions are describe with unexpressed subjects as in (14).

- (13) *Eu tenho quarenta e um anos.*
 ‘I am forty-one years old.’
 (Inq. 34:172)

- (14) *Tenho a vista ruim.*
 ‘(I) have bad sight.’
 (Inq. 33:908)

The remaining tokens are distributed through a number of idiomatic expressions with the verb *ter* ‘to have’. These forms are very formulaic in nature (Wray 2000) creating thus contexts that impede one or the other pattern from spreading. I believe that this degree of formulaicity and the frequency with which these constructions are used determine the reminiscence of unexpressed subjects in the language. Examples (15) to (17) illustrate some of the formulaic uses of *ter* ‘to have’ and 1sg subjects.

- (15) *Tenho família lá... a família do meu pai.*
 ‘(I) have family there... my father’s family.’
 (Inq. 34:614)
- (16) *Tive o prazer de jogar juvenil.*
 ‘(I) had the pleasure of playing as a teenager.’
 (Inq. 34:81)
- (17) *Tive muita pena do aconteceu com ele.*
 ‘(I) felt very sorry for what happened to him.’
 (Inq. 33:1046)

The patterns that emerge from each individual verb demonstrate that their specialized functions in discourse have an effect on the distribution of the variables. This finding can be explained by the fact that forms that collocate more often tend to be used more often together; therefore, they tend to be reanalyzed as being one construction (Bybee 2002b; Scheibman 2000; Wray 2000).

6. CONCLUSION.

Subject expression variation in BP for 1sg subjects can no longer be explained in terms of the morphology of the verb, emphasis in discourse, and/or change of referents as proposed by traditional analyses. Nevertheless, it can be best explained by examining the frequent recurring patterns of 1sg subjects and verbs that emerge in naturally occurring discourse, which become specialized to perform interactional and pragmatic functions.

It was found here that unexpressed subjects, despite their lower rate of occurrence, are still part of the speech of speakers of BP through specialized forms such as *sei* ‘(I) know’ and *tenho* ‘(I) have’ suggesting that the pattern is not completely out of use. Expressed subjects, on the other hand, are the productive pattern, being highly favored in contexts of low, mid, and high frequency verbs, exhibiting a wider range of use. In short, subject expression does not occur evenly, but it is subject to frequency-driven specialized effects, which entail ongoing variation between expressed and unexpressed subjects.

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PROSODIC FEATURES THAT LEAD TO BACK-CHANNEL FEEDBACK
IN NORTHERN MEXICAN SPANISH*

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In order to demonstrate attentiveness during a conversation it is generally necessary for the listener to provide back-channel feedback. To some extent, the times when back-channel feedback is welcome are determined by the speaker and conveyed to the listener with prosodic cues. In this study we sought to identify the cues used for this purpose in Northern Mexican Spanish. Based on quantitative analysis of a corpus of unstructured conversations, we found three cues, of which the most common is a pitch downslope followed by a pitch rise accompanied by a rate reduction on the last syllable and a drop in energy leading to a slight pause.

1. BACK-CHANNELS IN CONVERSATION.

To conduct an engaging conversation it is necessary for the listener to provide feedback. Typically the most common type of feedback consists of a short utterance such as *uhm*, *ok* or *yeah* in English or *ajá*, *si*, *uhm* in Spanish, produced during the turn of the other speaker that encourages the speaker to continue speaking and gives reassurance that the listener is interested. These back-channels (also called known as response tokens, reactive tokens, minimal responses and continuers) are important; lack of back-channel feedback can cause a listener to appear cold, disapproving or rigid.

Such problems are not uncommon in intercultural interactions. For example, it has been reported that the differences in back-channel style between English and Spanish speakers can lead native English speakers to perceive native Spanish speakers as overly aggressive and emotional, and conversely, to lead native Spanish speakers to feel that English native interlocutors are apathetic and cold (Berry 1994). Thus there is practical value to identifying the rules underlying the common patterns of back-channel use.

The positions where the listener produces back-channels depend on both the listener himself and on the speaker. In large part the listener-dependent factors reflect the semantics and pragmatics of the interaction; a listener may choose to demonstrate agreement, understanding, interest, surprise or another emotion in response to the information being conveyed by the speaker. On the other hand, the speaker-dependent factors involve not only the semantic and pragmatic dimensions, but also turn-taking signals, whereby the speaker indicates with prosodic cues what sort of contribution is expected from the listener and when.

2. CORPUS.

The corpus used consisted of five informal conversations between northern Mexican Spanish speakers, all from the state of Chihuahua: five from Chihuahua City, two from Delicias and one from Balleza (Acosta 2004). Two of the dialogs were between two women, two were between two men and one was mixed. The speakers were all in their early twenties. The speakers were

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recorded in situations where they were at ease, and were given no specific instructions. The dialogs seemed fairly natural, with topics including daily life, sports, school, work and fun activities. Each speaker was recorded on a separate channel. The conversations totaled 41 minutes.

The first step in analysis was the identification of the back-channels present in the corpus. This was done fairly casually, but difficult cases were decided according to the definition of Ward and Tsukahara (2000). Thus, to count as a back-channel an utterance had to: 1) respond directly to the content of an utterance of the other, 2) be optional, 3) not require acknowledgement by the other. The initial labeling was done independently by two labelers, both native Spanish speakers. Agreement was reasonable but not high, in part because of cases which were long enough to be ambiguous between back-channels and full turns. To ensure consistency, the corpus was then re-labeled, taking into consideration the opinions of both of the original labelers: this gives the set of actual back-channels. We also labeled possible backchannels; these were places where a back-channel seemed to be invited but did not actually occur. This was done for two reasons. First, since back-channel behavior varies among listeners, we felt that including these places would give a more complete picture, rather than only examining the places where the interlocutor in the corpus actually happened to produce a back-channel. Second, since the corpus consisted of face-to-face dialogs, in some cases back-channel feedback may have been expressed with a head nod or a gesture although a verbal response would also have been appropriate.

TABLE 1:
THE MOST COMMON BACK-CHANNELS IN THE CORPUS, REPRESENTED USING STANDARD ORTHOGRAPHIC CONVENTIONS.

Rank	Back-channel	Number
1	si	74
2	si si	24
3	ajá	21
4	mjm	13
5	laughter	12
6	ei	11
7	no	9
8	mm	7
9	ah	3
10	ay no	2

There were 195 actual occurrences of backchannel feedback; thus a back-channel occurred on average every 13 seconds. There were also 124 possible back-channel points. A variety of sounds served as back-channels; the most common are shown in Table 1. The other backchannels seen were mostly multi-word combinations of these. Phonetic labeling was not done, however it is worth noting that the vowels in *ajá* are close to a schwa, and the letter <j> represents a back fricative. Semantic labeling was also not done, however there was clearly substantial variation in the nuances being conveyed; various tokens conveying greater or lesser degrees of energy, interest, amusement, agreement, sympathy, surprise, and approval. Figure 1 illustrates a back-channel from the corpus. This dialog fragment came after the speaker said:

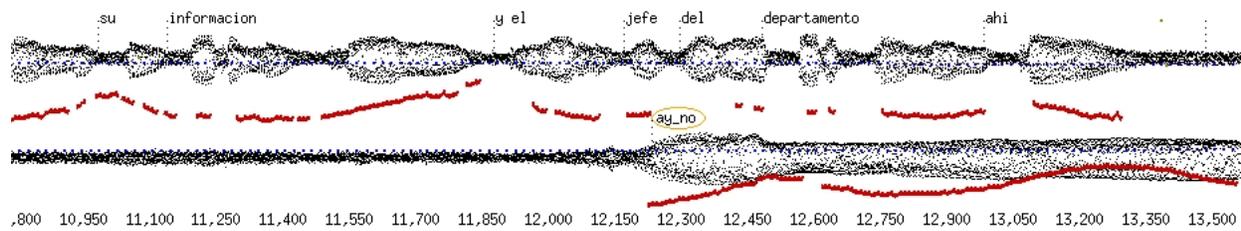
Ya, o sea, estaba en su maquina restaurando su informacion y el jefe del departamento ahí...

‘[He] was at his machine recovering his data and the department head was there...’

and the listener is expressing sympathy. This example is somewhat unusual in that the backchannel is longer than a second and almost completely overlaps the speaker's continued turn, however in other respects it is typical. The audio for this and other examples is available at <http://www.cs.utep.edu/isg/members/anais/>

FIGURE 1. THE PROSODIC CONTEXT OF A BACK-CHANNEL DEMONSTRATING SYMPATHY.

Here the upper track is the speaker and the bottom track the listener. Each track includes, from top to bottom, the transcription, the signal, and the pitch contour in log scale.



3. ANALYSIS.

The aim of the analysis was to identify prosodic cues from the speaker that cue (or invite) the listener to produce back-channel feedback. For this we used an eclectic method (Ward and Al Bayyari 2006) that has earlier proved successful with other languages. The key strategy was to find one or more prosodic patterns that occur frequently before back-channels, but infrequently in other contexts.

It quickly became apparent that there is no pitch pattern common to all cases, and thus no simple rule for determining when the speaker is cuing the listener to produce a back-channel. In addition many of the prosodic patterns common before back-channels were also frequently present elsewhere in the dialogs.

Analysis proceeded by a process of hypothesis formulation and refinement. After we had an idea of what the prosodic pattern was, we formalized it and then incorporated it in the system as a predictive rule. We could then use it to predict backchannel occurrences, and we could see (and hear) whether and how these predictions did or did not match backchannel responses in the corpus. For each hypothesized rule, we examined correct predictions, missing predictions, and false predictions, and then used this to refine the rule, typically by incorporating additional features. This iterative process led to the discovery of three patterns that significantly precede back-channel behavior.

Finally, to obtain the best possible quantitative description of each pattern, we systematically varied the parameters to find the description that gave the best performance. Here the job for the rule was, given the prosodic information in one track of a dialog, to predict where in the other track the back-channels occurred. The metric of performance was the F-measure, that is, the harmonic mean, of the accuracy (the percent of the predictions that matched a

backchannel) and the coverage (the percent of backchannels that matched a prediction) (Ward and Tsukahara 2000).

4. RESULTS.

So far we have identified three common prosodic patterns preceding back-channels, that is, three prosodic cues. The first and most common consists of a low pitch region followed by a rise in pitch accompanied by a reduction in rate. The second consists of a flat, low pitch region. The third group consists of a steep pitch drop, usually an indicator of an amusing comment. The rest of this section discusses each in turn.

4.1 Low-High-Slow Pattern. The most common cue is characterized by a pitch downslope or low region followed by a pitch rise accompanied by a rate reduction on the last syllable and a drop in energy leading into a slight pause. Best performance is obtained with a rule modeling the listener as producing a backchannel 200ms after an utterance by the speaker including:

- a low pitch region lasting for at least 50ms and for no more than 200ms with the pitch continuously below the 28th pitch percentile for that speaker, followed by
- a pitch rise ending above the 75th pitch percentile for that speaker, and lasting at least 80ms and no more than 300ms, and including or followed within 200 ms by
- a lengthened vowel (one lasting at least 100ms), followed within 80 ms by
- a period of silence lasting at least 200 ms.

Figure 2 shows this in diagram form. Figure 3 is an example where the speaker produces this intonation pattern and the listener responds with a back-channel. In this example, the speakers are discussing vacation plans and the back channel occurs after the speaker says:

El martes que la ví...

‘On Tuesday when I saw her... [making reference to a common friend]’

This rule gives 28.7% coverage, thus it explains over a quarter of the occurrences of back-channels and back-channel opportunities in the corpus. The accuracy is 14.2%, meaning that it over-predicts significantly, although this is far better than the baseline, namely the 6.1% accuracy expected by random guessing.

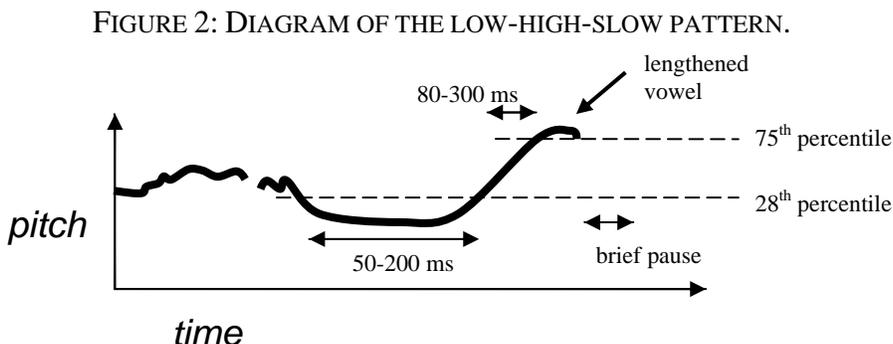
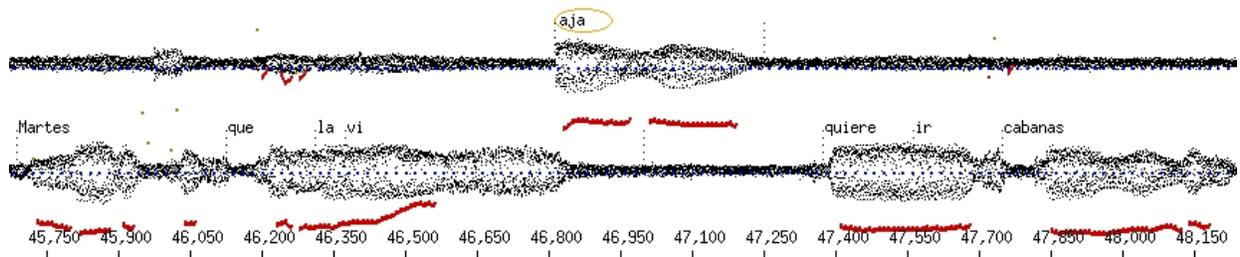


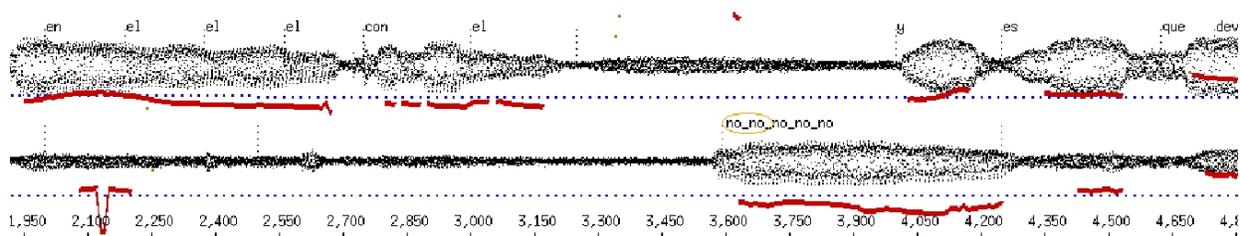
FIGURE 3. DIALOG FRAGMENT ILLUSTRATING THE LOW-HIGH-SLOW BACK-CHANNEL CUE.



4.2 Flat Pitch Region Pattern. The second cue for back-channels cue is a region of flat pitch. These cues accounted for 7.9% (i.e., the coverage was 7.9%) of both the possible and spoken back-channels but also occurred in many other places giving an accuracy of 6.5%. Figure 4 is an example of this type of cue. In this example the back-channel occurs after the speaker says:

Dos ceros y dos cincos me saque en el el el con el...
 ‘[My grades were] two zeroes and two fives with him...’

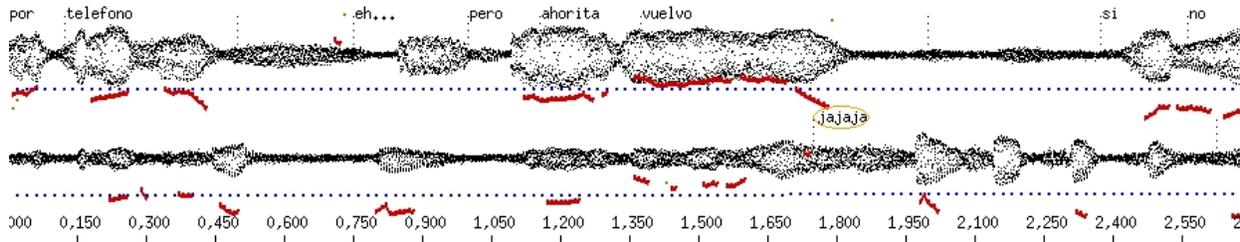
FIGURE 4. A FLAT PITCH REGION AS A BACK-CHANNEL CUE.



4.3 Pitch Drop Pattern. In some cases back-channels are preceded by a pitch drop, especially if the back-channel consists of laughter; indeed, this pitch drop typically marks the punch-line. Pitch-drop based backchannels were more common in the male-male dialogs, and in one dialog where the speakers appeared less focused on the conversation and the back-channels appear in less consistent places. Overall this type of cue gives 71.6% coverage and 7.7% accuracy. Figure 5 gives an example of this cue in a punch-line. In this example the backchannel comes after the speaker says:

Eh voy a hablar por teléfono eh... pero ahorita vuelvo.
 ‘I’m going to make a phone call uhm... but I’ll be right back.’

FIGURE 5. A PITCH DROP AS A BACK-CHANNEL CUE.



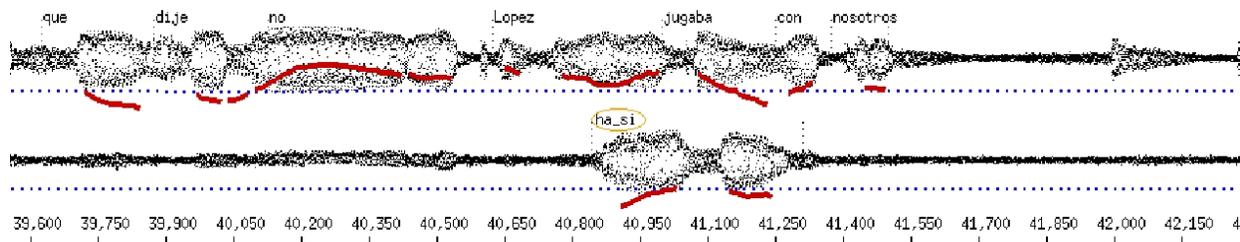
5. ERROR ANALYSIS.

There are cases in which the rules mentioned above failed to predict a back-channel (generated a miss) or predicted a back-channel in places where there was none (generated a false prediction). Those cases represent aspects of back-channeling that our simple three-rule model doesn't account for. Most of these aspects are beyond the scope of this study, including individual differences in back-channeling style and the processes of information transmission and processing. There are four other main causes for these errors.

5.1 Ongoing Speech. The most common cause for misses was the appearance of back-channels overlapping the other's ongoing utterance. Since our most common rule is based on the presence of a small pause, if the speaker continues speaking with no significant pause, this cue is missed. This was not uncommon; as Berry (1994) observes, overlapped speech is common in Spanish. Figure 6 shows an example of a miss due to ongoing speech; here the back-channel occurs in the middle of the sentence:

¿Te dije no? López jugaba con nosotros.
 'I told you right? Lopez played [soccer] with us.'

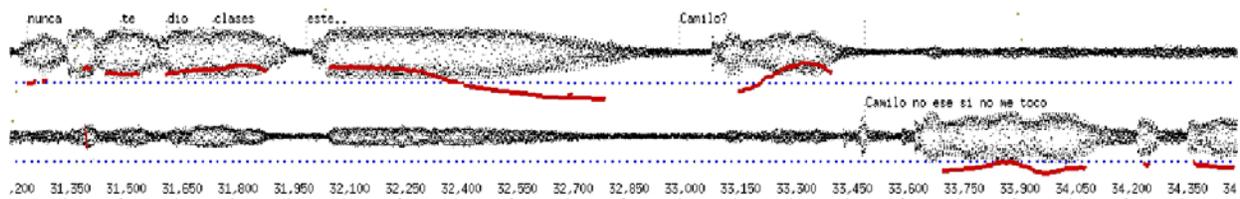
FIGURE 6. OVERLAPPED SPEECH CAUSING A MISS.



5.2 Overlapped Speech. Another cause was cases where both speakers were talking at once. In some such cases there was a back-channel cue produced by one speaker, but of course no back-channel by the other, so these counted as false predictions.

5.3 Questions. Another major cause of false predictions was yes/no questions, whose intonation is similar to that of back-channel cues. Questions are similarly characterized by a rising pitch intonation at the end of a sentence, the main differences being: 1) questions are not as frequently preceded by a lowered pitch region; 2) in questions a final lengthening is less common; and 3) in questions the pitch rise may be very long, sometimes lasting throughout the duration of the utterance. However, there are many exceptions to these tendencies. Figure 7 shows an example of a false prediction due to a case where the prosody of a yes-no question happened to meet the criteria for our first cue.

FIGURE 7. YES-NO QUESTION INTONATION.



5.4 Gender Differences. There are significant differences in performance between conversations, and in general the rule was much less successful on those dialogs with both speakers male (coverage 19%, accuracy 9%) than on the others (coverage 30%, accuracy 18%). This might reflect differences in feedback styles between genders.

6. CONCLUSION.

This paper has shown that in Spanish, as in other languages, the times when back-channels are appropriate are signaled by the speaker to the listener in part by prosodic cues. The specific cues identified have not been seen before; certainly they differ from those seen in English (Ward and Tsukahara 2000). It is intriguing that our prosodic account of when back-channels are appropriate in Spanish has weaker explanatory power, quantitatively, than our account for English, but we do not know yet whether this is a real difference or a mere reflection of the fact that this corpus consists entirely of face-to-face dialogs between friends.

Intercultural dialogs are sometimes awkward, and differences in back-channeling practices seem to be a contributing factor: second language learners may back-channel inappropriately or, perhaps equally undesirably, they may fall back to a more rigid, cold back-channel free listening style. Teaching learners the rules governing back-channeling seems to require many examples and controlled practice of various kinds; we are currently developing a training sequence to do this effectively (Ward et al. 2007).

We have identified these prosodic patterns as cuing back-channels without considering individual differences, without regard to interactions with pitch-accent, micro prosody, or other prosodic functions, and without consideration of how back-channeling and back-channel cuing interacts with various specific dialog activities. Future work should investigate these aspects of the phenomenon.

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TWO FLAVORS OF MASS IN SPANISH: A PHILOSOPHICAL RECONSIDERATION*

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*An interesting observation about mass terms in Spanish, and one not often discussed, is that they seem to come in two kinds- prototypical mass terms (e.g., *agua* ‘water’, *oro* ‘gold’) and collective mass terms (e.g., *mueble* ‘furniture’). Within this paper, I show that the two kinds of mass terms have different extensions and operate on wholly different ontological levels. Whereas prototypical mass terms denote quantities of substance in their extension, collective mass terms have only sets of individuals in their extension. The difference between the two, then, is essentially a difference between mererology versus sets. Normally absent from earlier work on mass terms, crosslinguistic evidence can help shed light on the issue of the ontological status of referents of mass terms.*

1. INTRODUCTION.

The semantics of mass terms is one of the familiar topics in philosophy and linguistics (cf. Pelletier 1979). An observation about mass terms in Spanish, and one not often discussed, is that they seem to come in two kinds- prototypical mass (e.g., *agua* ‘water’, *oro* ‘gold’) and collective mass (e.g., *mueble* ‘furniture’). In examining the use of mass terms in Spanish, it is proposed that the two kinds of mass terms have different extensions and operate on wholly different ontological levels. Whereas prototypical mass nouns (henceforth PM) denote quantities of substance in their extension, collective mass nouns (henceforth CM) have only sets of individuals in their extension.

The difference between the two is essentially a difference between mererology versus sets. On the one hand, PM in Spanish fit the traditional fusion view of mass terms. Such is the view of Cartwright (1970, 1979), who subscribes to the idea that the referents of mass terms exist in the form of entities called ‘quantities’. In reference to homogeneity, quantities are like temporal sequences or events- all satisfy the logical properties of cumulativity and dissectivity (cf. Simons 1987). On the other hand, CM in Spanish fit the (plural) individual view of, among others, Link (1983), who proposed that mass terms refer to a collection of discrete entities.

By adopting this dual-view of mass terms, we will have more accurately captures the intuition about the distinction within the category of mass in Spanish. The proposed distinction is also of philosophical significance. What ontological labels attached to these terms is of importance because these labels reflect the most fundamental features of reality as presented to us through language. As the philosopher Brian Carr remarked: “Its subject matter is the most fundamental aspects of the way we think and talk about reality” (Carr 1987: 2).

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2. DATA.

To present the case for the metaphysical distinction within the category of mass in Spanish, I take the two mass terms – *agua* ‘water’ and *mueble* ‘furniture’- as the representative empirical battle-axes of this study.

First, whereas *mueble* ‘furniture’ can appear in the plural form, *agua* ‘water’ cannot.

- (1) El camión llevaba muebles
the truck carry-PAST-3SG furniture-PL
‘The truck carried furniture.’
- (2) Tome agua/*aguas
drink-PAST-1SG water
‘I drank water.’

Second, while *muebles* ‘furniture’ can be directly counted, *agua* ‘water’ cannot directly combine with a cardinal; compare (3) and (4).

- (3) Compre dos muebles
buy-PAST-1SG two furniture-PL
‘I bought two pieces of furniture.’
- (4) *Tome dos agua
drink-PAST-1SG two water

For individuation of reference in (5) to be possible, a measure phrase or classifier phrase is obligatory, just like English.

- (5) Tome dos litros/betellas de agua
drink-PAST-1SG two liter-pl/bottle-PL of water
‘I drank two liters/bottles of water.’

Since the use of plural marker is not available with mass nouns like *agua* ‘water’, it is expected that they would also differ from mass nouns like *muebles* ‘furniture’ in terms of their distribution with quantifiers of different number feature. This is true in Spanish. Whereas mass terms like ‘furniture’ can associate with quantifiers of plural form (*muchas/muchos, pocas/os*), mass terms like ‘water’ cannot; they can only associate with quantifiers of singular form (*mucha/mucho, poca/o*); see examples (6) and (7).

- (6) La piscina tiene mucha agua/*muchas aguas
the pool has much water
‘The pool has a lot of water in it.’
- (7) El almacén vende muchos muebles
the store sell-PRES-3SG much furniture-PL
‘The store sells a lot of furniture.’

Further difference is exhibited through different verb number agreement. In (8), *nieve* ‘snow’ agrees with verbs in the singular form but not verb in the plural form. On the other hand, in (9), *muebles* ‘furniture’ can agree with verbs in the plural form.

- (8) La nieve se ha/*han derretido
the snow 3REFL has/*have melt-PART
‘The snow has/*have melted.’
- (9) Los muebles han llegado
the-PL furniture-PL have arrive-PART
‘The furniture have arrived.’

Finally, in Spanish and while the plural anaphoric pronoun cannot refer back to *agua* ‘water’, it can be used to refer back to *muebles* ‘furniture’, as shown in (10) and (11) given below.

- (10) Kim encontró oro en Australia, pero es/*son falso*(s)
Kim find-PAST-1SG gold in Australia but is/*are fake
‘Kim found gold in Australia but it is/*they are fake.’
- (11) Kim compró muebles en AllAmerican, pero estaban hechos/*estaba
Kim buy-past-1-sg furniture in AllAmerican but were made /*was
hecho en China
made in China
‘Kim bought furniture at AllAmerican but they were made in China.’

3. TWO FLAVORS OF MASS IN SPANISH.

The use of mass terms in Spanish, then, invites us to probe the connection between language and reality. Indeed, the language appears to be more explicit in regard to the distinction within the mass category. In this paper, I propose that there are two kinds of mass terms in Spanish- collective mass and prototypical mass- and moreover, these two kinds of mass terms operate on wholly different ontological levels. Whereas terms like *mueble* denote sets of individuals, terms like *agua* denote quantities of substance. In a nutshell, the difference between prototypical mass and collective mass is essentially one between mereology versus sets. On the one hand, we have collective mass terms fitting the plurality of individuals view. On the other hand, we have prototypical mass terms fitting the traditional stuff-fusion view of mass terms. The following elaborates on these two conflicting views and argues why strictly adopting one would fail to accurately characterize the “mass” data observed in Spanish.

3.1. Collective Mass: E Unus Pluribus. Many studies on the semantics of mass nouns have their inspiration from Link (1983), who suggests that we consider them as denoting a plurality of things, each of the same kind for any given kind of stuff. Supposedly, properties like the cumulative reference can be accounted for by employing set-theoretic metalanguage. For his formalization, Link employed some notions from lattice theory along with the usual set-theoretic notions- crucially set inclusion for membership. Essentially, this model assumes a domain of

Here, certain verbs take particular nouns as arguments- namely nouns denoting a plurality of things. For example, the act of separating normally requires that there must be at least two or more concrete objects for which any separation is to be possible. In (13) and (14), *separó los sellos* and *separó los muebles* -‘separated the stamps’ and ‘separated the furniture’ respectively - are acceptable because in both cases, the argument denotes a plurality of individuals. However, this is not so with the singular counterpart *sello/mueble* as well as *agua* in (15). The upshot is that interpretability of these examples is dependent on whether the referent of the argument NP is a collection of things or not.

The plurality view would work well for count plurals for such things as *mueble* ‘furniture’. While they fail to provide reference for a broad class of kinds of stuff, namely, prototypical kinds such as ‘water’, it certainly could apply to terms like ‘furniture’. In the lattice-theoretic characterization of Link (1983), we can take the individual *mueble* as the “atoms” and *muebles* denotes the set of those singular pieces plus the sets including the combination of those pieces, entities of which that can be enumerated.

3.2. Prototypical Mass: Of Quantities of Substance. There is also a different view of what a mass term denotes in the philosophical literature and this view, as we shall see, fits the characterization of prototypical mass terms.

A particularly well-known account is that of Cartwright (1970), which subscribes to the idea that occurrences of a mass term X are to be understood by the phrase ‘quantity of X’. This concept of quantity and its associated notion ‘amount’ are further refined in ‘Amounts and Measures of Amount’ (1979), in which Cartwright elaborated on the properties of measurement of quantities. In her formalization of quantity, Cartwright invokes the notion of fusion. She defined the fusion of a set Q as “the object included in all and only those things which include every element of Q” (Cartwright 1979: 184). Aware of the potential confusion over the use of ‘set’ and ‘element’, she emphasized that the inclusion relation in terms of which the fusion of a set is to be defined is not set-theoretic but mereological. The following illustrates the idea: Suppose Q = bucket of water. If Q is empty, its fusion has no subquantity which is a quantity of water. If Q is nonempty, then its fusion $Fu\{\}$ is the mereological union of its set of its subquantities. The measure of the quantity of water can then be obtained simply by applying a measure function m to a set of subquantities:

$$(16) \quad m(Fu\{x, y, z, \dots\}) = m(x) + m(y) + m(z) + \dots \quad (\text{Cartwright 1979: 184})$$

Thus, m is additive, reiterating the cumulative property of mass terms like ‘water’. Also, according to Cartwright, “we can preserve the fact that $m(x) > m(y)$ if and only if x is as much water as y for every pair of elements in the domain of m, by saying that wherever x is not a subquantity of y, there’s an element in the domain which a subquantity of x exclusively.” (Cartwright 1979:190) Though she did not use the term distributive property, the remark is a reference to such property, which mainly states that any part of something that is W is also W. (Cheng 1973).

Cartwright’s account of mass terms in terms of quantity and its associated notion amount are insightful and at the same time, intuitively appealing. Essentially, under her account, mass nouns amount to measuring stuff. Measurement is a kind of number assignment and in this kind of number assignment, the number tells something about the extensive property (e.g., volume), as denoted by the measure unit, of the empirical objects, not the cardinality of the empirical

object. Thus, we do not enumerate ‘*one water, two water, etc’ (or **un agua, dos agua...*). There just is no determinate principle for counting the number of quantities of, say, water in a single cup. Moreover, the notion of ‘quantity’ does not have clear boundaries to provide a criterion for counting. Normally, counting requires that the concept draw precise boundaries around each object in its extension. Quantity, however, does not have clear boundaries and thus for any kind of “counting” of *agua* ‘water’ to make any sense, we need to know specifically whether we are talking about, say, *litros* ‘liters’ or *botella* ‘bottles’. It is these specific reference-dividers that do the work in singling out individual portions of *agua*. This contrast with terms like *muebles*, in which direct counting is possible. The conceptual difference is this: the referent of the term *muebles* possesses precise, identifiable boundaries around the object to provide a criterion for counting. As further illustration of this distinction- that the reference of prototypical mass lacks what philosophers call “criteria of identification” (cf. Laycock 1975) whereas collective mass do not- consider the following thought experiment:

Mrs. Gonzalez is the manager of a new furniture store. Bill, a high school studying for the Advanced Placement Spanish Exam, asks Mrs. Gonzalez to be his conversation partner in exchange for his help with the inventories. One day, Bill saw some furniture in the display room that he thought should not be there so he moved ‘un mueble’ in stockroom A and the other in stockroom B. When Bill left and Mrs. Gonzalez came in to the display room, she realized the missing furniture. Now, even though Mrs. Gonzalez is not able to identify which ‘mueble’ is in A and which is in B, the fact is, she is certainly ABLE to identify it. Why? Because ‘los muebles’ along with other material objects have a built-in structure so that one is able to pick out and distinguish some of it from some other. There is a unique and specifiable procedure for dividing up ‘los muebles’ into discrete parts such that one of these will in fact be the “un mueble” that ends up in A and the other in B though supposedly Mrs. Gonzalez does not know which is which. Now, this is not so with matter. Suppose there’s a tank containing ‘agua’ and Bill pours it into two glasses- A and B. It’s plain that Mrs. Gonzalez cannot identify the ‘agua’ that will be in A or B. She is unable to identify that water at all because there’s no specifiable procedure whereby the water in the tank can be divided into discrete parts per se such that one of these parts will consist of the water that ends up in A and the other in B.

Indeed, cases like ‘furniture’ (or *muebles*) would be problematic for quantity-based account of mass terms. According to Cartwright, “Part of what is meant by saying something is a quantity of water is that it has subquantity of water which is a quantity of water” (Cartwright 1979: 190). For collective mass terms, such account does not seem to be apt, for what does it mean to be a quantity of furniture, to have part of it which is also a subquantity of furniture, if there is such a thing? Are there really quantities of stuff like furniture?

4. ENGLISH MASS TERMS: ON THE SAME ONTOLOGICAL PLANE.

Unfortunately, English is not so explicit in the distinction. Unlike a Spanish speaker, an English speaker is not forced to choose between singular and plural when using such mass term (*mueble* vs *muebles* ‘furniture’). With terms like ‘furniture’, there is no number marker which specifies that the set involved is one of collection of individuals.

Still, the account for Spanish *muebles* would be intuitively appealing as ‘furniture’ is normally recognized as semantically plural. Furniture is solid and spatially distinct from other stuff. It has clear boundaries and as such, it is possible to divide this thing called ‘furniture’ into material objects or spatially coherent wholes, namely ‘chair’, ‘sofa’, ‘table’, etc. In this way, ‘furniture’ does seem to provide a criterion for counting. Certainly, although we cannot use

number words in talking about water and furniture in English, for the latter, we can sometimes talk about many of it:

(17) Kim bought furniture at AllAmerican but it was made in China.

(18) Kim bought furniture at AllAmerican but they were made in China.

In certain aspect, English is indeed peculiar. That the English grammar gives us mass shows that syntactic categories do not divide up a language's nouns in the same way as the semantic categories they are based on. Despite the difference with Spanish, what is suggested here is that we simply think of 'furniture' (and the Spanish-equivalent *agua*) as a kind of mass term whose semantic structure encompasses both individuals and corresponding pluralities.

As further argument for the semantical difference within the category of "mass", it has been noted (cf. ter Meulen 1981) that there is an unmistakable parallelism between verb class and the interpretation of mass terms. Of particular interest here when studying the relation of VP denotation and the interpretation of mass terms are the two classes of verbs- activity verbs and accomplishment verbs. Activity verbs are verbs that "call for periods of time that are not unique or definite" (Vendler 1967: 149). Examples of activities are 'sleep', 'drive a car', and 'sweeping the floor'. Accomplishment verbs, on the other hand, are verbs which "imply the notion of unique and definite time periods" (Vendler 1967: 149). The action of an accomplishment is terminated after the attainment of a goal either implicitly or explicitly given in the lexical meaning of the verb or in the overall meaning of the phrase. Examples include 'build a house' and 'solve a problem'. In contrast to activity verbs, in which time stretches are unbounded, accomplishment verbs are situated on bounded periods of time. The idea can also be formulated in terms of the notion of events. Essential to the notion of events is the part-of relation. Events can become part of larger events, or contain subevents themselves. The part-of relation between events can be utilized in distinguishing between different sorts of events, some of which cannot be in the part of relation to some others, and some of which can. Specifically, the first describes the kind of event denoted by accomplishments, the second activities. Since accomplishment verbs describe actions that involve change towards a final goal, they do not have parts that are events denoted by the same verb. In this case, the event is said to be heterogeneous (Hinrichs 1985) as their subevents are not events denoted by the same accomplishment verb. For example, if one 'solves a problem' within a certain period of time, in general, one does not solve it also in parts of that period. Events denoted by activity verbs, on the other hand, have parts that are events denoted by the same verb. In this case, the event is said to be homogeneous (Hinrichs 1985) as the event denoted has subevents as parts denoted by the same verb. For example, any event of 'driving a car' contains subevents that are events of driving as well, in general.

The interpretation of mass terms, then, shares an important feature with the two classes of verbs. The denotation of terms such as 'water' also have the logical property of homogeneous reference, just like the denotation of activity verbs. The denotation of terms like 'furniture', on the other hand, has the logical property of heterogeneous reference, just like the denotation of accomplishment verbs. As referents of terms like 'water' (or *agua*) are unbounded in the spatial domain, so too are the events denoted by activity verbs in the temporal domain. As referents of terms like 'furniture' (or *muebles*) are bounded in the spatial domain, so too are the events denoted by accomplishment verbs in the temporal domain.

The observed arbitrariness in the English case can be seen as evidence that the count/mass distinction is a purely morpho-syntactic phenomenon. This mismatch of syntax and semantic is certainly not exclusive to terms like ‘furniture’. For example, ‘scissors’ and ‘pants’ are plural-only although it refers to a single object. We have no account for these cases of collective mass or *pluralia tantum* except only to say that speakers sometimes allow use of conceptual information than grammatical information to distinguish different kinds of noun.

5. CONCLUSION.

Metaphysically speaking, these are two very conflicting claims about what a mass term denotes. For instance, the plurality view would be appropriate for terms like *muebles* but not *agua*. The reference of *muebles* ‘furniture’ can be divided into discrete objects. Because of this possibility, we can pick out an individual object (the thing called *muebles*) and count how many there are in a given space. Terms like *agua* ‘water’ on the other hand, do not divide their reference into discrete objects and as such we cannot ask how many water there are. The plurality view, then, is not able to provide reference for a broad class of kind of mass items. On the other hand, a quantity-based account may not be apt for mass terms like *muebles* ‘furniture’ since quantities cannot directly individuate physical objects. Individuation is possible only with the help of an “individuator” (Quine 1960) such as a measure or classifier phrase (e.g., ‘a liter/glass of’).

The very conflicting nature of existing claims indicates that the reference of mass terms continues to be an elusive notion. Yet it need not be. By recognizing the distinction within the category of mass terms, the current proposal avoids the confusion that results in lumping different mass terms in one category referenced by the same ontological entity.

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This paper proposes that for resultatives in a language to occur in the surface unaccusative frame, two conditions must be met, namely the compound condition and the head feature percolation condition. On this account, non-compound resultatives in English, French, German, Japanese, Korean, Romanian and Swedish cannot occur in the surface unaccusative frame because they do not meet the first condition. Moreover, Swedish RVCs cannot occur in the frame because they do not meet the second condition. Finally, as Japanese and Mandarin RVCs meet both conditions, they can be used in the surface unaccusative frame. In addition, the paper shows that the fact that Mandarin RVCs can occur in the surface unaccusative frame and participate in the causative alternation is theoretically significant. It demonstrates that Levin and Rappaport Hovav's (1995) hypothesis as to causative alternation does not hold crosslinguistically.

1. INTRODUCTION.

A RESULTATIVE in this paper is defined as a complex predicate composed of two free components in a single clause, with the eventuality denoted by one component causing a change in a certain entity as a result, a change that is denoted by the other component, but not entailed by the causing component. While in English the two components of a transitive resultative are not adjacent to each other, the two components form a resultative verb compound (RVC) in Mandarin, as seen from the contrast between (1) and (2).

- (1) John KICKED the door OPEN.
- (2) Zhangsan TI-KAI-le men.
Zhangsan kick-open-PERF door
'Zhangsan kicked the door open.'

As shown in (3-5) below, many Mandarin RVCs can occur in both the object-oriented canonical transitive frame and the surface unaccusative frame, in which only the Causee argument of an RVC is syntactically expressed and it is expressed in subject position.

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¹Abbreviations: ACC=accusative; CL=classifier; DAT=dative; IND=indicative; INTR=intransitive; MM=modifier marker; NOM=nominative; PERF=perfective; PL=plural; POSS=possessive; PRES=present tense; PROG=progressive; TR=transitive.

- (3) a. Zhangsan ca-ganjing-le zhuozi.
 Zhangsan wipe-clean-PERF table
 ‘Zhangsan wiped the table clean.’
- b. Zhuozi ca-ganjing-le.
 table wipe-clean-PERF
 Literally: ‘The table wiped clean.’ → ‘The table was wiped clean.’
- (4) a. Zhangsan qi-hong-le qiang
 Zhangsan paint-red-PERF wall
 ‘Zhangsan painted the wall red.’
- b. Qiang qi-hong-le.
 wall paint-red-PERF
 Literally: ‘The wall painted red.’ → ‘The wall was painted red.’
- (5) a. Zhangsan ku-shi-le shoupa.
 Zhangsan cry-wet-PERF handkerchief
 ‘Zhangsan cried the handkerchief wet.’
- b. Shoupa ku-shi-le.
 handkerchief cry-wet-PERF
 Literally: ‘The handkerchief cried wet.’ → ‘The handkerchief was cried wet.’

With respect to resultatives like Mandarin *ca-ganjing* ‘wipe-clean,’ there is a contrast between Mandarin on the one hand and English and Swedish on the other. That is, although as shown by the (a) sentences in (3) above and (6-8) below, resultatives in all these languages can occur in the transitive frame, English and Swedish resultatives, unlike Mandarin resultatives, cannot occur in the surface unaccusative frame, as shown by the ungrammaticality of the (b) sentences in (6-8).

- (6) a. John wiped the table clean.
 b. *The table wiped clean.
- (7) Swedish
 a. John torkade bordet rent.
 John wiped table.the clean
 ‘John wiped the table clean.’
- b. *Bordet torkade rent.
 table.the wiped clean
 Intended: ‘The table was wiped clean.’
- (8) Swedish
 a. John ren-torkade bordet.
 John clean-wiped table.the
 ‘John wiped the table clean.’

- b. *Bordet ren-torkade.
 table.the clean-wiped
 Intended: ‘The table was wiped clean.’

The main purpose of this paper is to account for why (3b) is grammatical and the (b) sentences in (6-8) are not. I propose that for resultatives in a language to appear in the surface unaccusative frame, two conditions must be met. First, the two components of a resultative must form a predicate of the word level. Second, the resultative formed does not violate the head feature percolation condition as stated in (9).

(9) Head Feature Percolation Condition (cf. Yafei Li: 1990, 1995)

The way that the arguments of the head of a compound are realized in the syntax should be maintained on the compound level.

The paper is organized as follows. Section 2 motivates the compound condition. Section 3 discusses the head feature percolation condition, the contrast between Mandarin and Swedish RVCs, and the additional evidence from Japanese RVCs. Section 4 discusses the relation of the surface unaccusative frame to the middle construction and the theoretical significance of the occurrence of Mandarin RVCs in the surface unaccusative frame. The final section summarizes the main points made in the paper.

2. COMPOUND CONDITION.

The first condition proposed, namely the compound condition, is motivated by two facts. First, the two components of a resultative, i.e., the causing component and the result component, form a compound in Mandarin; however, English resultatives as in (6a) and Swedish resultatives as in (7a) do not.² Obviously, the two components of each resultative in (6a) and (7a) do not constitute a compound, because they are even not adjacent to each other. The question is whether Mandarin resultatives are truly compounds. Crucially, there are two pieces of evidence that Mandarin RVCs are compounds. First, as pointed out by Thompson (1973), Mandarin RVCs do not allow aspect markers to intervene between their two components, as shown in (10). Importantly, as shown in (11), aspect markers like the perfective *-le* are attached to word level predicates.

- (10) a. Zhangsan ca-ganjing-LE zhuozi.
 Zhangsan wipe-clean-PERF table
 ‘Zhangsan wiped the table clean.’

- b. *Zhangsan ca-LE-ganjing zhuozi.
 Zhangsan wipe-PERF-clean table
 Intended: ‘Zhangsan wiped the table clean.’

- (11) Zhangsan budan ca-LE zhuozi, erqie xi-LE yifu.
 Zhangsan not.only wipe-PERF table but.also wash-PERF clothes
 ‘Zhangsan not only wiped the table, but also washed the clothes.’

² Swedish compound resultatives like (8) will be discussed in section 3.

Second, as shown in (12a), the result component *ganjing* in *ca-ganjing* ‘wipe-clean’ can be modified with a degree modifier when used separately. However, the same component cannot be modified in the same way when used in an RVC, as shown in (12b) (cf. (12c)).

- (12) a. Na-zhang zhuozi HEN GANJING.
 That-CL table very clean
 ‘That table is very clean.’
- b. *Zhangsan ca-HEN-GANJING-le na-zhang zhuozi.
 Zhangsan wipe-very-clean-PERF that-CL table
 Intended: ‘Zhangsan wiped that table very clean.’
- c. Zhangsan ca-GANJING-le na-zhang zhuozi.
 Zhangsan wipe-clean-PERF that-CL table
 ‘Zhangsan wiped that table clean.’

This shows that *ca-ganjing* as a whole is a word, thus obeying the “Lexical Integrity Principle,” which says that “no phrase-level rule may affect a proper subpart of a word” (C.-T. James Huang 1984: 60; cf. Di Sciullo and Williams 1987: 49).

In addition to the fact that while Mandarin resultatives are formed as compounds, English resultatives like (6a) and Swedish resultatives like (7a) are not, the compound condition on the occurrence of a resultative in the surface unaccusative frame is further motivated by the following phenomenon. That is, although both *wipe ... clean* in (6a) and *break* in (13) encode a change of state, (6b) is bad and (13b) is good. This indicates that for a predicate to occur in the surface unaccusative frame, the predicate as a whole must be a word, which includes compounds.

- (13) a. John broke the glass.
 b. The glass broke.

The compound condition proposed predicts that non-compound resultatives can not appear in the surface unaccusative frame. This prediction is borne out by the fact that as shown in (14-15), none of the non-compound resultatives in French, German, Japanese, Korean, and Romanian can occur in the surface unaccusative frame.

- (14) Intended: ‘The table was wiped clean.’
- a. *La table a frotté propre. (French)
 the table has wiped clean
- b. *Der Tisch wischte sauber. (German)
 the table wiped clean
- c. *Teeburu-ga kirei-ni fui-ta. (Japanese)
 table-NOM clean-NI wipe-PAST

- d. *Takca-ka kkaykkusha-key takk-ass-ta. (Korean)
 table-NOM clean-KEY wipe-PAST-IND
- e. *Masa a şters curată. (Romanian)
 table.the has wiped clean

(15) Intended: ‘The wall was painted red.’

- a. *Le mur a peint rouge. (French)
 the wall has painted red
- b. *Die Wand strich rot. (German)
 the wall painted red
- c. *Kabe-ga aka-ku nut-ta. (Japanese)
 wall-NOM red-KU paint-PAST
- d. *Pyek-i ppalkah-key chilha-yess-ta. (Korean)
 wall-NOM red-KEY paint-PAST-IND
- e. *Peretele pictat roşu. (Romanian)
 wall painted red

3. HEAD FEATURE PERCOLATION CONDITION AND THE SURFACE UNACCUSATIVE FRAME.

While the compound condition accounts for the contrast between (3b) on the one hand and (6b) and (7b) on the other, the second condition, i.e., the head feature percolation condition, is needed to account for the contrast between (3b) and (8b). This is because in both (3b) and (8b), the resultatives involved are compounds. The compound status of the Swedish resultative involved in (8) can be seen from the fact that as happens with Mandarin resultatives, the result component cannot be modified with a degree modifier, as shown in (16a). This forms a stark contrast with (16b), which is a non-compound resultative, and with (16c), in which the result component used in (8a) is employed separately and is not part of a compound.

- (16) a. *John mycket-ren-torkade bordet.
 John very-clean-wiped table.the
 Intended: ‘John wiped the table very clean.’
- b. John torkade bordet mycket rent.
 John wiped table.the very clean
 ‘John wiped the table very clean.’
- c. Bordet var mycket rent.
 table.the be.PAST very clean
 ‘The table was very clean.’

If both (3b) and (8b) involve a compound resultative and thus meet the compound condition, then the question is how to account for the contrast between them. I argue that the grammaticality of (3b) and the ungrammaticality of (8b) can be attributed to the headedness of the RVCs involved and to the head feature percolation condition in (9), namely that the way the arguments of the head of a compound are realized in the syntax should be maintained on the compound level.

To start, there is evidence that Swedish RVCs are head-final. First, the category of each Swedish RVC involved is identical with the category of the right component, which is a verb, not with the category of the left component, which is an adjective. Second, unlike Japanese and Mandarin RVCs, in which the causing predicate precedes the result predicate, Swedish RVCs have the reverse order. I argue that such an ordering is motivated by the fact that adjectives in Swedish cannot bear tense inflection, as shown in (17a). Rather, a copula has to be used to reflect tense, as shown in (17b).

- (17) a. *John trött.
 John tired
 Intended: ‘John was tired.’
- b. John var trött.
 John be.PAST tired
 ‘John was tired.’

Because Swedish RVCs function as main predicates and thus are verbs, and because regular tense inflection in the language is in the form of suffix, it is necessary for the component which can bear tense to be in the right position of the compounds. If so, the ordering of the two components of Swedish RVCs provides additional support for the view that the right component is the head.

In addition to the evidence that Swedish RVCs are head-final, there is independent evidence for the head feature percolation condition from Japanese V-V compounds in general and RVCs in particular. Related to this, it needs to be pointed out that Japanese V-V compounds, including RVCs, are head-final. One important piece of evidence for this comes from case-marking patterns. For example, although as shown in (18a) and (18b), *ou* ‘chase’ and *tsuku* ‘attach,’ when used separately, require an accusative object and a dative object respectively, the compound *oi-tsuku* ‘chase-attach’ can only be followed by a dative object, as shown in (18c).

- (18) a. John-ga Mary-o OT-ta.
 John-NOM Maru-ACC chase-PAST
 ‘John chased Mary.’ (Nishiyama 1998: 177)
- b. John-ga Bill-ni TUI-ta.
 John-NOM Bill-DAT attach-PAST
 ‘John attached to Bill.’ (Nishiyama 1998: 177)

- c. John-ga Mary-NI/*O OI-TUI-ta.
 John-NOM Mary-DAT/ACC chase-attach-PAST
 ‘John chased Mary and attached to (i.e., caught up with) Mary.’
 (Nishiyama 1998: 184)

This suggests that the second component of the compound *oi-tsuku* is the head.

Keeping in mind the fact that Japanese V-V compounds are head-final, we turn to the evidence for the head feature percolation condition from such compounds. First, the fact that (19), for example, is grammatical is because the V2 of the compound involved, which is the head of the compound, is transitive and the way its arguments are realized in the overt syntax is maintained on the compound level.

- (19) John-ga soup-o [suupu-o] HUKI-KOBOSI-ta.
 John-NOM soup-ACC boil.over (INTR)-spill (TR)-PAST
 ‘The soup boiled over and John spilled it.’ (Nishiyama 1998: 193)

Crucially, note that in this example, V1 is intransitive and its single argument is realized as the object of the sentence. As shown in (20), when V1 is used alone, its single argument should be expressed in the subject position.

- (20) Suupu-ga HUKI-ta.
 soup-NOM boil.over (INTR)-PAST
 ‘The soup boiled over.’

This shows that the way the argument(s) of the non-head component of a compound are realized in the syntax need not be maintained on the compound level. In turn, it suggests that the grammaticality of (19) is due to the fact that the argument realization related to V2 (the head) rather than V1 (the non-head) is preserved on the compound level. In addition to the evidence above, there is more important evidence for the head feature percolation condition from Japanese RVCs. Specifically, as shown in (21), the sentence is ungrammatical on the second reading, namely the object-oriented reading.

- (21) John-ga Bill-o OI-AKI-ta.
 John-NOM Bill-ACC chase-get.bored-PAST
 (i) ‘John chased Bill and as a result John got bored.’
 (ii) *‘John chased Bill and as a result Bill got bored.’

Given that Japanese RVCs are head-final, the fact that (21) only allows a subject-oriented reading, and does not allow an object-oriented reading provides strong evidence for the head feature percolation condition. That is, the second reading of (21) is ruled out because in this case the single argument of V2, the head of the compound, is realized in the object position of the whole sentence. This way of realizing the single argument of V2, however, violates the head feature percolation condition, given that as shown in (22), the single argument of *akiru* ‘get bored’ is realized in the subject position when the verb is used alone and is not part of a compound.

- (22) JOHN-GA AKI-ta.
 John-NOM get.bored-PAST
 ‘John got bored.’

As for the first reading of (21), it is allowed because in this case the single argument of V2 is realized in the subject position of the whole sentence, thus obeying the head feature percolation condition.

Given the independently motivated head feature percolation condition and the head-final nature of Swedish RVCs, the ungrammaticality of sentences like (8b), which is repeated as (23b) below, can be readily accounted for.

- (23) a. John ren-torkade bordet.
 John clean-wiped table.the
 ‘John wiped the table clean.’
- b. *Bordet ren-torkade.
 table.the clean-wiped
 Intended: ‘The table was wiped clean.’

That is, such sentences violate the head feature percolation condition. Specifically, as shown in (24), the internal argument of *torka*, the head of *ren-torka* ‘clean-wipe’ in (23a), is realized in the object position when *torka* is used separately.

- (24) John torkade bordet.
 John wiped table.the
 ‘John wiped the table.’

However, in (23b) the internal argument of *torka* is expressed in the subject position, thus violating the head feature percolation and leading to the ungrammaticality of the sentence.

If headedness and the head feature percolation condition can account for why Swedish RVCs cannot occur in the surface unaccusative frame, then the question is whether they can account for why Mandarin RVCs can appear in that frame, as shown in (3b), repeated as (25b) below.

- (25) a. Zhangsan ca-ganjing-le zhuozi.
 Zhangsan wipe-clean-PERF table
 ‘Zhangsan wiped the table clean.’
- b. Zhuozi ca-ganjing-le.
 table wipe-clean-PERF
 Literally: ‘The table wiped clean.’ → ‘The table was wiped clean.’

I argue that the answer to the above question is positive. This is because there is evidence that Mandarin RVCs are headless. The evidence comes from the grammaticality of examples like (26).

- (26) a. Na-bao yifu XI-LEI-le Zhangsan.
 that-CL clothes wash-tired-PERF Zhangsan
 ‘Zhangsan washed that bundle of clothes and the clothes got Zhangsan tired.’
- b. Na-ping jiu HE-ZUI-le Zhangsan.
 that-CL liquor drink-inebriated-PERF Zhangsan
 ‘Zhangsan drank that bottle of liquor and the liquor got Zhangsan drunk.’
- c. Na-ben shu XIE-BAI-le Zhangsan-de toufa.
 that-CL book write-white-PERF Zhangsan-POSS hair
 ‘Zhangsan wrote that book and the book got Zhangsan’s hair white.’

Given the independently motivated head feature percolation condition, the fact that the sentences in (26) are grammatical indicates that neither V1 nor V2 can be the head of a Mandarin RVC. Take (26a) as an example. The fact that the external argument of the V1 of the RVC in this sentence is realized in the overt object position of the compound causes a problem to the claim that the first component of the compound is the head. This is because when *xi* ‘wash’ is used alone, its external argument is realized in the subject position of an active sentence, as shown in (27).

- (27) Zhangsan XI-le na-bao yifu.
 Zhangsan wash-PERF that-bundle clothes
 ‘Zhangsan washed that bundle of clothes.’

Likewise, the fact that the internal argument of the V1 of the RVC in (26a) is realized in the overt subject position of the compound also poses a problem for the claim that the first component is the head. This is because as (27) shows, the internal argument of *xi* ‘wash’ is realized in the object position of an active sentence when *xi* is not part of a compound. Moreover, the fact that the single argument of the V2 of *xi-lei* ‘wash-tired’ in (26a) is realized in the overt object position of the compound causes a problem to the claim that the second component is the head of the compound. This is because when V2 is used alone, its single argument must be realized in the overt subject position, as shown in (28).

- (28) Zhangsan LEI-le.
 Zhangsan tired-PERF
 ‘Zhangsan got tired.’

Finally, the existence of sentences like (26a) also challenges the claim that Mandarin RVCs are double-headed because after all neither the realization of the external and internal arguments of V1 nor the realization of the single argument of V2 is maintained on the compound level. Therefore, the fact that sentences like (26a) are grammatical in Mandarin suggests that Mandarin RVCs are headless.³ Given this, the grammaticality of (25b) is not something unexpected.

³ In the literature, there has been a lot of discussion as to whether Mandarin RVCs have a head. Concerning this issue, there are four logical possibilities and each of them has been proposed in the literature: (i) V1 being the head (e.g., Cheng and C.-T. James Huang 1994; Yafei Li 1990, 1993, 1995, 1999; Huei-Ling Lin 1998; Ross 1990;

Additional evidence for our proposal as to the occurrence of a resultative in the surface unaccusative frame comes from Japanese RVCs. As Japanese RVCs are compounds and are word level predicates (cf. Yafei Li 1993), they are expected to be able to occur in the surface unaccusative frame as long as they do not violate the head feature percolation condition. If as suggested above, Japanese RVCs are head-final,⁴ our proposal predicts that if the result component of a Japanese RVC is intransitive and if its single argument is realized in the subject position of a sentence containing the RVC, the sentence would be grammatical due to its obeying the head feature percolation condition. As shown in (29), this prediction is borne out.

(29) Nishiyama 1998: 189

- a. Sigoto-ga si-agat-ta.
job-NOM do-get.ready-PAST
'The job was done and got ready.' ['The job was done and it was completed.']
- b. Coat-ga [cooto-ga] ki-kuzure-ta.
coat-NOM wear-get.out.of.shape-PAST
'The coat was worn and got out of shape.'

4. TWO ADDITIONAL ISSUES RELATED TO THE SURFACE UNACCUSATIVE FRAME.

In this section, I would like to address two additional issues related to the surface unaccusative frame: one about the middle construction and the other about the theoretical significance of the occurrence of Mandarin RVCs in the surface unaccusative frame.

First, the middle construction. Note that although resultatives like *wipe...clean* in English cannot occur in the surface unaccusative frame, it can appear in a similar syntactic frame, namely the middle construction, as shown by the contrast between (30a) and (30b).

- (30) a. *The table wipes/wiped clean.
- b. The table wipes/wiped clean easily.

The question is why with the addition of an adverbial phrase like *easily*, (30a) becomes grammatical. I propose that the grammaticality of (30b) is due to the fact that the addition of *easily* makes the event more stativized and thus make it more possible to talk from the perspective of the entity being acted upon and to present this entity and the action involved as an event in itself. In this respect, the adverbial phrase in the middle construction plays a similar role to the progressive aspect in sentences like (31) in making the event stativized (through the meaning of continuousness in the case of the progressive aspect) and in contributing to make possible the presentation from the perspective of the entity being acted upon.

Lingling Wang 2001); (ii) V2 being the head (e.g., Linding Li 1984; Tai 2003; Hongqi Wang 1995; Yong 1997); (iii) both V1 and V2 being heads (e.g., Gu 1992); (iv) neither V1 nor V2 being the head (e.g., Chu-Ren Huang and Fu-Wen Lin 1992). As seen from the above discussion, this study provides evidence for the fourth possibility, namely the headlessness position, from the point of view of argument realization.

⁴ In this regard, cf. Yafei Li's (1993) reasoning that since most types of compounds are head-final in Japanese and since the right-hand component of an RVC is of the same category as the whole compound, namely a verb, "the minimal assumption is that they pattern with all these other types of compounds in being head-final" (487).

- (31) a. The SWAT team is also told that a blue and white shirt is hanging on the door knob. (<http://www.cnn.com/SPECIALS/2000/columbine.cd/Pages/NARRATIVE.Time.Line2.htm>)
- b. There is also a television and magazines to pass the time while clothes are washing. (<http://camping.about.com/od/campgroundreviews/fr/ucpcge27.htm>)

Second, the fact that Mandarin RVCs can occur in the surface unaccusative frame and thus can participate in the causative alternation as illustrated in (32) is theoretically significant because it shows that Levin and Rappaport Hovav's (1995: 107; cf. 1991: 133, note 8) hypothesis—"an externally caused verb can leave its cause argument unexpressed only if the nature of the causing event is left completely unspecified"—does not hold crosslinguistically.

- (32) a. Zhangsan xi-ganjing-le yifu.
Zhangsan wash-clean-PERF clothes
'Zhangsan washed his clothes clean.'
- b. Yifu xi-ganjing-le.
clothes wash-clean-PERF
'The clothes were washed clean.'

Levin and Rappaport Hovav cite the English causative alternation as evidence for their hypothesis. For example, as shown in (33), *break* can participate in the causative alternation because, as demonstrated by (33a), (34) and (35) respectively, not only agents, but also instruments and natural forces can act as the Causer.

- (33) a. Jack broke the window.
b. The window broke.

(34) The stones broke the window.

(35) The hurricane broke the window.

In contrast, as shown in (36), *cut* cannot occur in the causative alternation because, as evidenced by (37), the nature of the causing event for *cut* cannot be completely unspecified, but rather has to be specified as involving an agent Causer (as in (36a)) or an instrument Causer (as in (38)).

- (36) a. Jane cut the cake.
b. *The cake cut.

(37) *The lightning cut the clothesline. (Levin and Rappaport Hovav 1995: 103)

(38) The knife cut the cake.

Given Levin and Rappaport Hovav's explanation of the contrast between *break* and *cut*, we should expect *xi-ganjing* 'wash-clean' not to participate in the causative alternation. This is

because when there is a causing subevent for *xi-ganjing*, the Causer has to an agent as exemplified in (32a) or an instrument as shown in (39). Crucially, as shown in (40), the Causer cannot be a natural force.

(39) Xiyiji xi-ganjing-le yifu.
 washing.machine wash-clean-PERF clothes
 ‘The clothes were washed clean with a washing machine.’

(40) */?Da yu xi-ganjing-le yifu.
 big rain wash-clean-PERF clothes
 ‘The rainstorm washed the clothes clean.’

Given that the nature of the causing subevent of *xi-ganjing* has to be specified and that this RVC can occur in the causative alternation as evidenced by (32), it can be concluded that Levin and Rappaport Hovav’s hypothesis concerning the causative alternation does not hold for Mandarin, and thus does not hold crosslinguistically. This is further supported by the causative alternation found with simplex predicates like *e*, as shown in (41).

(41) a. Zhangsan e-le Lisi san zhou.
 Zhangsan hungry-PERF Lisi three week
 ‘Zhangsan starved Lisi for three weeks.’

b. Lisi e-le san zhou.
 Lisi hungry-PERF three week
 ‘Lisi starved for three weeks.’

Crucially, although as shown in (41a), *e* allows an agent Causer, a “natural force” Causer sounds rather unnatural, as shown in (42).

(42) ?Jihuang e-le Lisi san zhou.
 famine hungry-PERF Lisi three week
 ‘The famine starved Lisi for three weeks.’

Moreover, with respect to *e*, it is beyond imagination to think of a case where an instrument acts as the Causer. This shows that the Causer of *e* cannot be completely unspecified. As a result, Levin and Rappaport Hovav’s hypothesis incorrectly predicts that *e* cannot participate in the causative alternation.

In fact, when predicates like *e* were taken into consideration, it would mean that Levin and Rappaport Hovav’s hypothesis does not hold of English, either. This is because English predicates such as *starve*, like Mandarin predicates such as *e* ‘hungry,’ cannot be completely unspecified. Crucially, like Mandarin *e*, English *starve* cannot occur with an instrument Causer. However, as shown in (43), *starve* can participate in the causative alternation.

(43) a. John starved Bill for three weeks.
 b. Bill starved for three weeks.

It can be concluded from the above discussion that if both cases like *e* ‘hunger’ and those like *ca-ganjing* ‘wipe-clean’ are taken into consideration, Levin and Rappaport Hovav’s hypothesis would not hold of English or Mandarin. Moreover, if the *e* cases alone were excluded, the hypothesis could not be said to hold crosslinguistically, given the causative alternation attested with Mandarin RVCs like *ca-ganjing*.

5. CONCLUSION.

In sum, this paper proposes that for resultatives in a language to occur in the surface unaccusative frame, two conditions must be met, namely that the resultative is realized as a compound and that the head feature percolation condition is not violated. On this account, non-compound resultatives in English, French, German, Japanese, Korean, Romanian and Swedish cannot occur in the surface unaccusative frame because they do not meet the first condition. Moreover, Swedish RVCs cannot occur in the frame because they do not meet the second condition. Finally, as Japanese and Mandarin RVCs meet both conditions, they can be used in the surface unaccusative frame.

In addition, the paper shows that the fact that Mandarin RVCs can occur in the surface unaccusative frame and participate in the causative alternation is theoretically significant. It demonstrates that Levin and Rappaport Hovav’s (1995) hypothesis as to causative alternation does not hold crosslinguistically. In fact, if cases like *starve* are taken into consideration, it can be concluded that the hypothesis even does not hold of English.

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SELF: DOES IT BEHAVE AS A REFLEXIVE PRONOUN IN AMERICAN SIGN LANGUAGE?

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Traditional analyses assume that American Sign Language has a reflexive pronoun expressed with the sign SELF. This assumption prompts the need to investigate the function of SELF to determine whether SELF functions as a canonically-defined reflexive. Based on corpora data, the study on SELF shows there are three phonological forms of SELF which appear to be constructed with different semantic-pragmatic motivations construed in discourse context. Moreover, the study provides few examples of SELF functioning as reflexive pronoun; however, evidence shows that SELF has three grammatical functions: reflexive, emphatic, and chunking unit. The study proposes that SELF is not best analyzed as a reflexive pronoun, as previously claimed, but instead can be viewed as a morpheme used to mark emphatic function.

1. INTRODUCTION.

It is generally assumed that American Sign Language has a reflexive pronoun, which is expressed with the sign SELF (Baker-Shenk and Cokely 1980; Kegl 2003; Liddell 2003; Lillo-Martin 1995, 2003). However, there remains the empirical question of whether American Sign Language SELF is in fact a reflexive pronoun and in this paper I will examine whether SELF functions as a canonically defined reflexive: a participant that refers coreferentially to the entity that is acted upon in event constructions. Observe the following examples of SELF in typical American Sign Language (ASL) constructions. I will gloss this sign as ‘SELF’.

(1)

SUPPORT SELF
support 1P.SG
‘I support myself’

(2)

WORK SELF
work 2P.SG
‘you work by yourself’

(3)

MAN SELF OLD
man 3P.SG old
‘the man himself is old’

(4)

GIRL SELF FIND MONEY

girl 3P.SG find money

'the girl herself finds the money'

'the girl finds the money by herself'

Revisiting the assumptions, I analyze the sign SELF in order to determine if it functions as a reflexive pronoun similar to that found in spoken languages by adopting the cognitive/functionalist approach (based on descriptions by scholars such as Comrie 2003, Kemmer 2003, Kemmer and Barlow 1996, Maldonado 2003). These examples show that the pronominal morpheme does exhibit a number of other functions besides the canonical reflexive. This paper presents an analysis on the use of SELF which is limited and has a range of related functions other than a reflexive.

The findings illustrate three major points. First, these three phonological forms appear to be constructed with different semantic-pragmatic motivations construed in discourse context. Second, in contrast to previous research, this study finds that the use of SELF as a canonical reflexive is minimal. Finally, my analysis reveals that SELF is distributed into three grammatical functions; hence, I argue that SELF is not best analyzed as a reflexive pronoun as previously claimed but instead can be viewed as a morpheme marking emphatic functions.

1.1 Literature Review. There has been very little research done on reflexive pronouns in ASL. The few analyses (Baker-Shenk and Cokely 1980, Kegl 2003, Liddell 2003, Lillo-Martin 1995, 2003) that have been done make one assumption. The first is that ASL has reflexives. Their assumption lends to two other assumptions: the second assumption is that the sign SELF is used to express co-referentiality. The third, based on the structuralist framework, analyzes the reflexive to be co-referential with the subject of the local clause in which it occurs and may only go up one clause that governs the embedded clause of SELF (Lillo-Martin 1995: 166). To illustrate the canonical use of the reflexive, where the subject and object are co-referential, English examples are given below.

(5) Jim_i saw himself_i in the mirror

(6) She_i cut herself_i.

Reflexive constructions contain two participants referring to the same entity and use transitive verbs denoting a participant imposing physical contact or force upon another participant (Kemmer 2003). Following this definition, I investigate to determine if SELF functions as a co-referential anaphoric morpheme.

Although ASL dictionaries and linguistic studies have identified SELF with either one or two forms with one or two movements respectively (Baker-Shenk and Cokely 1980; Kegl 2003; Liddell 2003; Lillo-Martin 1995, 2003; Tennant and Brown 1998; Stokoe 1960), my analysis reveals that SELF has three distinct forms which will be discussed in depth. The paper will address two main issues: (1) the functions of the three SELF morphemes in discourse, and (2) the formal properties that differentiate the three to determine if these are phonological or morphosyntactic variants or semantic/pragmatically motivated uses.

2. DATA.

To evaluate the use of SELF as a reflexive, I used data from five publicly available videotapes in which ASL was documented in naturalistic environments. The genres of these videotapes range from monologues to conversations to narratives. The length of each videotape is approximately 45 to 60 minutes, totaling to 3.75 hours of data.

I first identified signs for SELF that had the handshape of a closed fist with extended thumb and the palm facing contralaterally moving away from the signer in a straight path in neutral signing space. After capturing SELF signs, I transcribed the context of the utterances that contained SELF using written English glosses that closely represent the meanings of ASL signs. The transcription revealed three distinct forms of the morpheme. The first form depicts a strong singular movement moving away from the signer in neutral signing space. The second form is expressed with two short movements, moving away from the signer in neutral signing space. Resembling closely the second form, the third form moves twice toward the non-dominant index finger in neutral signing space. They are coded as: SELF (the general category)

Signs:

SELF+ (one singular movement)

SELF++ (two short movements)

SELF-ONE++ (two short movements impacting on non-dominant index finger)

Extracting utterances depended on boundary properties like non-manual signals of head nod, eyeblink, and pause (refer to other works: ABKN, Liddell, etc.). Various syntactic constructions containing SELF were identified in the data, and based on this I extracted further constructions of similar syntactic patterns. Examining syntactic constructions with three coded forms, I analyzed their semantic/pragmatic uses to determine the function, and the validity of this analysis was confirmed by two native ASL signers.

3. FUNCTIONS OF SELF.

Out of 3.75 hours of videotaped data, I extracted 36 constructions with SELF. Two SELF tokens were discarded due to ambiguous morpho-syntactic use because they were realized alone as full-standing utterances. Thirty-four tokens are categorized according to their functions. First, the data show that there are three canonical forms of SELF. Second, the analysis shows there are three grammatical functions in expressed SELF constructions which will be discussed in depth. The three functions are defined as: *reflexive*, *emphatic*, and *chunking unit*. The function of emphatics is subcategorized into five types: *headed emphatic*, *predicate nominal emphatic*, *predicate adjective emphatic*, *argument emphatic*, *independent emphatic*.

TABLE 1.
DISTRIBUTION OF SELF ACCORDING TO FUNCTIONS IDENTIFIED.
PERCENTAGE IS DIVIDED BY 34 TOKENS.

	SELF		SELF++		SELF-ONE++		Total	
Reflexive	1	2.9%	2	5.9%	0	0.0%	3	8.8%
Emphatics	5	24.7%	12	35.3%	9	26.5%	26	76.5%
Headed emphatic	0	0.0%	3	8.8%	4	11.8%	7	20.6%
Predicate nominal emphatic	0	0.0%	4	11.8%	2	5.9%	6	17.6%
Predicate adjective emphatic	0	0.0%	0	0.0%	1	2.9%	1	2.9%
Argument emphatic	0	0.0%	5	14.7%	2	5.9%	7	20.6%
Independent emphatic	5	14.7%	0	0.0%	0	0.0%	5	14.7%
Chunking unit	0	0.0%	5	14.7%	0	0.0%	5	14.7%
Total	6	17/6%	19	55.9%	9	26.5%	34	100%

The distribution analysis shows that the reflexive is not the most frequent function but emphatics are with 3 tokens compared to 26 tokens respectively. Realizations of emphatic use are subcategorized: 7 tokens of headed emphatics, 6 tokens of predicate nominal emphatics, 1 token of predicate adjective emphatics, 7 tokens of argument emphatics, and 5 tokens of independent emphatics. Five tokens of SELF function as chunking units. More interestingly, the distribution suggests that there is a relationship between grammatical function and the phonological form. Examining how semantic/pragmatic uses are distributed in phonological forms will be discussed in-depth in the following sections.

3.1 Canonical reflexive pronouns. The first function identified in the data is the canonical reflexive pronoun, that is, where SELF functions as a co-referential anaphora with the subject of the clause. Observe examples (7), (8), and (9):

(7)

CAN **SELF+arc** SUPPORT

can 3P.PL support

'They can independently support themselves' (Freda Norman, 18:09m)

(8)

FUTURE SEE **SELF++** #TV

future-tense see 1P.SG television

'I will see myself on TV' (Patrick Graybill 38:49m)

(9)

pointing STRUGGLE SELF++

1P.SG struggle 1P.SG

'I struggle with myself' (Valli 9:33m)

Out of 34 extracted utterances, there are only three illustrations of SELF that function as canonical reflexives. Recognizing that ASL has variable subject expression, where subjects are often left unexpressed (as in Spanish, Italian, Japanese and many other languages), interlocutors depend on discourse context to determine who is the subject referent. Examples (7), (8), and (9) show that their verbs--SUPPORT, SEE, and STRUGGLE--are transitive with two participants in subject and object roles. In example (9), STRUGGLE is a transitive verb that has two semantic valences where SELF++ fills the object position, which functions as a reflexive. Moreover, example (9) has an expressed 1st person subject and object. To test these verbs to determine they are transitive we can insert a lexical noun and pointing (functioning as a simple pronoun) in subject and object positions as in:

(10)

#JOHN SUPPORT PRO-POSS CHILDREN

John support 3P.SG. PRO-POSS children

'John supports his children'

(11)

pointing SUPPORT pointing

2P.SG support 1P.SG

'You support me'

(12)

CAT SEE MOUSE

cat see mouse

'A cat sees a mouse'

(13)

pointing SEE pointing

2P.SG see 1P.SG

'You see me'

(17) I see myself	SEE	SELF++
	see	1P.SG
(18) I cut myself	?hs:1-cut-on-left-hand	SELF++
	cut-left-hand	1P.SG

These examples differ in the verbs' phonological forms having the ability to exploit space to express conceptualized subjects and objects in constructions and this suggests there are phonological effects on how co-referentiality is expressed. In example (16), LOVE is realized with two close-fisted arms 'hugging' chest. This is a lexicalized form that cannot phonologically mark the subject and object in space is defined as a *plain verb* (Padden 1983). To mark subject and object in LOVE constructions, one must realize them separately from LOVE.

Unlike LOVE, SEE, in example (17), is a depictive phonological form that can flexibly direct the path of *seeing* from the signer's eye to an actual/conceptualized referent in the space. The trajectory path of SEE refers to the object, but SEE is more restrictive in marking subject except for 1st person because it is not phonologically possible to initiate the SEE path from places other than the signer's eye. This type of verb is conventionally described as an *inflecting verb* that embeds subject and object roles (Padden 1983). If discourse requires to the signer to mark the subject overtly, she has to realize the subject through pointing² or by using a lexical noun. However, the SEE construction is ambiguous due to two possible interpretations, because it may either denote the co-referential relationship of a same participant with two roles or it may express the intention that the person wants to verify the event by seeing it with her own eyes. To disambiguate possible interpretations, interlocutors must rely on discourse context to understand the signer's intention.

Another construction with a depictive verb form is illustrated in example (18). The verb *cut* is realized with a handshape with an index finger showing how the cut is performed on a particular location on the non-dominant hand. This type of high iconic complex form³ encodes more detailed information about the *cut* event by conveying *cut's* manner, path, and location as well as encoding the instrument's shape, and size, in contrast with SEE. This suggests that the *cut* verb is not transitive similar to LOVE and SEE because of its being a high iconic complex form. The object is not expressed because it is iconically represented in the sign of '*cut*'. In consultation with two native ASL signers, we concur that to express co-referentiality in this particular construction we typically express through the signer's construal of the event and do not realize SELF. Expressing SELF to denote co-referentiality is not obligatory, but discourse context implies co-referentiality.

Examining more on how high iconic complex forms express co-referentiality will be a worthwhile investigation. For now, it appears that the realization of the high iconic complex form is dependent on how the signer construes the event of *cut*, which suggests that the use of

² Others have analyzed pointing as simple pronouns: *I*, *you*, and *s/he*.

³ High iconic complex forms are most frequently described as *spatial verbs*, *classifier constructions*, *productive morphemes*, *polysynthetic* or *polycomponential signs* (Emmorey 2003).

high iconic complex form is structured differently to express co-referentiality by not realizing SELF in the clause.

Investigating how these three verbs have different phonological forms, I propose that there is a relationship between the effects of phonological forms and the expression of co-referentiality. To examine the phonological forms' effects on expressing co-referentiality will require a large corpus data analysis, which will reveal interesting findings. Despite the few examples found in these data sources, it seems that ASL signers are capable of conveying co-referentiality with and without SELF. The following sections indicate that SELF by itself is not a reflexive morpheme but a morpheme capable of functioning as a reflexive dependent on discourse context.

3.2 Emphatics. Emphatics designate the target referent with an explicit intention to disambiguate from other potential referents in discourse context. The analysis of ASL emphatics of SELF is founded on Kemmer and Barlow's (1996) study of English *-self*. Kemmer and Barlow propose three types of emphatics: *headed emphatics*, *predicate emphatics* (with three subtypes of *predicate nominal*, *predicate adjective*, and *predicate obliques*), and *argument emphatics*. The same is observed in the ASL use of emphatics and I adopt Kemmer and Barlow's definitions to categorize for SELF. However, there will be an additional category: *independent emphatics*, to mark the target referent's independent ability to execute the action.

3.2.1 Headed Emphatics. According to Kemmer and Barlow's study (1996), the most frequent pattern for emphatics is constructed with English *-self* which is adjuncted to a lexical or pronominal head in an NP and is defined as a *headed emphatic*: [head + Pron-*self*] (1996: 232). An example in English constructed with a headed emphatic schema is: *he himself wanted to travel*. Kemmer and Barlow argue that the function of the headed emphatics is to disambiguate implicitly the target referent from other potential referents in discourse context (1996: 235). What they found for their analysis on English headed emphatics is something very similar to what is found in ASL. In *headed emphatics*, SELF marks the subject of a clause with a lexical verb and occurs directly following a head noun. Below are three examples to illustrate this function.

(19)

OTHER	PERSON	(eyeblink)	#OSCAR	#CLAVEAU	pointing-to-left.
other	person		Oscar	Claveau	deictic marker

_____ (eyebrows raised),

R: #U	#U	RESEARCH	OTHER	SCHOOL	ALL-OVER
L: pointing+ -#U	SELF+++ #U				
deictic marker-at-#U	3P.SG-at-#U-focus-marked	research	other	school	all-over-places

'Another person is named Oscar Claveau. He himself researched other schools everywhere.' (Freda Norman, 11:14m)

(20) _____(eyebrows raised),
THAT SELF++ SELF-ONE++, DON'T-KNOW ZERO-HAND SIGN
 DET 3P.SG 3p.sg-focus-marked don't know none-at-all sign
'That himself himself didn't know any sign language at all.' (Freda Norman, 11:29m)

(21)
 REAL #MARIA #SMITH SELF-ONE++ DON'T-LIKE TWO-OF-US COMMENT
 really Maria Smith 3P.SG-focus-marked don't like both of us comment
'Actually, Maria Smith herself doesn't like both of us commenting about her.' (CHALB, 12:03m)

The headed emphatic marker is the most frequent function presented in the data, and the headed emphatics' forms are SELF++ and SELF-ONE++. The data suggests an emergent schema with SELF++ and SELF-ONE++ adjuncted to the lexical or pronominal head prior to verbs, which is also seen in English (Kemmer and Barlow 1996). The semantic-pragmatic distinction between SELF++ and SELF-ONE++ is that SELF-ONE++ emphasizes the referent with a "focus" marker of the non-dominant index finger. In examples (19) and (20), the syntactic subject is realized as a pronominal through a deictic marker of pointing and/or THAT, and SELF++ and SELF-ONE++ co-occurs with the pronominal. Notice in example (19), SELF-ONE++ is intentionally glossed for the morphophonological form, because it appears to function semantically as SELF-ONE++ to mark the focus on the referent (Oscar Claveau) although the fingerspelled #U (the last realized handshape of the referent's last name) replaces the canonical phonological form of non-dominant index finger. Also, example (21) shows that a fingerspelled name precedes SELF-ONE++ to mark the realized fingerspelled referent.

Observe in example (20), the construction shows two forms of SELF: SELF++ and SELF-ONE++, which suggests that both forms do not share the same semantic-pragmatic use. The realization of SELF-ONE++ occurs after SELF++ and is semantically motivated to mark the target referent more explicit than SELF++ would have. This reinforces that SELF-ONE++ functions as a focus-marker to explicitly mark the target referent. It would be interesting to see if the ordering of these two SELFs is pragmatically motivated by investigating if SELF-ONE++ can be realized prior to SELF++ and find whether there are differences in semantic-pragmatic implication in the ordering.

If SELF++ and/or SELF-ONE++ were not realized in given examples, then their constructions will still be semantically and syntactically acceptable; however, the function of SELF++ and SELF-ONE++ reduces potential ambiguity of referents that the signer has introduced in the course of discourse. Moreover, SELF++ and SELF-ONE++ intend to make the target referent accessible by prolonging the activation of the target referent with the [head + SELF] construction.

3.2.2 Predicate emphatics. The second type, predicate emphatics, concerns [head + SELF] constructions that function as predicates similar to those seen in headed emphatics. In English, the difference between predicate and headed emphatics is that predicate emphatics have copulas in the constructions while headed emphatics contain lexical verbs. But in the case of ASL, there is no copula morpheme, so headed emphatics express verbs while predicate emphatics do not

realize verbs. Two subtypes are categorized according to types of predicative constructions as *predicate nominal* and *predicate adjective*.

3.2.2.1 Subject of a predicate nominal. The first subtype of SELF functions as the subject of a predicate nominal, which accounts for six of the 34 tokens. Below are some examples.

(22)

POSS-PRO-1 MOTHER SELF++ SCHOOL TEACHER
 1POSS.P.SG mother 3P.SG school teacher

'My mother herself is a school teacher' (Patrick Graybill, 19:03m)

(23)

PERSON	NAME	#FELIX	#HEN	#HEMEN T.	R: #T L: pointing+- #T	#T SELF++-#T	HIGH- RANKING
person	name	Felix	Hen..	Hement	deictic marker	3P.SG- focus- marked	high-ranking

'The person's name is Felix Hen...Hement. He himself is a high-ranking boss' (Freda Norman, 7:50m)

(24)

#PRONOUN SELF++ WORD SUBSTITUTE #NOUN
 pronoun 3P.SG word substitute noun

'Pronoun itself is a word substituting a noun'

These examples, (22), (23), and (24), illustrate that predicate emphatics share a similar schema to that seen in headed emphatics [head + SELF] to mark the target referent and disambiguate other potential referents in the discourse context. In the subject position, the schema [head + SELF] is expressed with lexical nouns of MOTHER, the last realized handshape of T of the fingerspelled name, HEMENT, and #PRONOUN in examples (22-24) respectively.

SELF++ and SELF-ONE++ occur in these examples not SELF+. This provides interesting clues that [head + SELF] are realized with SELF++ and SELF-ONE++, which is also observed in headed emphatic constructions.

3.2.2.2 Subject of a predicate adjective. There is only one example illustrating SELF functioning as a subject in a predicate adjective clause. The construction in example is an adjectival predicate:

(25)

#EVA	#BRAUN	SELF-ONE++	PREGNANT
Eva	Braun	3P.SG-focus- marked	pregnant

'Eva Braun is pregnant' (CHALB 13:37m)

The rendering of the non-dominant index finger in SELF-ONE++ heavily marks the target referent, Eva Braun, the subject of the predicate as being pregnant. Similar to predicate nominal and headed emphatic constructions, SELF-ONE++ functions as a subject in predicate adjective clause which is abstracted from the [head + SELF] schema to emphatically mark the target referent in the context.

Both SELF++ and SELF-ONE++ are expressed in the subject schema to emphasize the target referent, but they differ in semantic use with respect to the focus marker used to disambiguate the referent from other referents. Suppose SELF was not realized as the adjuncted subject in the construction, what would examples of predicate nominals and predicate adjectives express? Minus SELF, they are still grammatical and retain similar semantic construals with lesser emphasis markedly focused on the referent. This is also seen in headed emphatic constructions, and reinforces that SELF++ and SELF-ONE++ function as emphatic morphemes adjuncted with head nouns for the subject construction.

3.2.3 Argument emphatics. The third type of emphatic SELF construction is realized with SELF as a full-standing NP head where it functions as a NP argument in the clause. Three examples are provided here:

(26)

MAN	NAME	#RICK	#HOLT	R-CHIN- NAME-SIGN	NICE.	SELF++	WORK	FOR
man	name	Rick	Holt	Rick Holt's name sign	nice.	3P.SG	work	for

#PANAM	AIRPLANE	SAME	WAITER	#STEWARD
Pan Am	airline	same as	waiter	steward

'A man named Rick Holt, his name sign is initialized R on chin, is nice. He himself works for the Pan Am airline similar to a waiter and is a steward.' (CHALB, 15:43m)

(27)

HAPPEN	SELF++	PRINCIPAL	INSTITUTION	DEAF
happen	3P.SG	principal	residential school	deaf

'Just happens he himself is a principal of the school for the deaf' (CHALB, 14:41m)

(28) _____(head shift/eye gaze upleft)
 #MAGNAT L: RAISE-HAND **SELF++** ONE-ALONE PLAN CAN
 Magnat raised-left-hand 1P.SG alone plan can

‘Magnat raised his left hand and said, “I myself alone can plan.”’ (Freda Norman, 13:27m)

In these examples, SELF++ functions as an autonomous NP head in the non-predicate clause and predicate clause. In these examples, SELF++ is the head noun used to mark the referent emphatically. Comparing SELF++ with pointing or a lexical noun as subject of the clause, the function of pointing and lexical noun differ: 1) the use of pointing directs attention to the referent to express who the subject is while 2) the use of a lexical noun is a high-content information realization that expresses the target. Contrasting with the subject realized with pointing or lexical noun, SELF++ functions as an autonomous emphatic NP in subject position in the clause.

The interesting finding here is that SELF++ and SELF-ONE++ function as subjects in clauses with lexical verbs and without verbs in predicate nominal and predicate adjective constructions, which indicates that both forms are semantically realized for emphatics. Comparing constructions with SELF++ and SELF-ONE++ merits a closer examination to determine their semantic uses by interchanging both forms in clauses to understand their uses. The following section discusses the realization of SELF+ and its function as an independent emphatic.

3.2.4. Independent emphatics. In the fourth major emphatic function, SELF+ refers to the independence of the referent, or their ability to do something on their own. To convey the independence of the referent’s action, SELF+ is the only realized form that carries the heavy pragmatic function of independence. Five examples out of 34 were found. Here are three examples:

(29)
 pointing TRY **SELF+**
 2p.sg.deictic marker try 2P.SG- independent-emphatic
‘You try it for yourself’ (Patrick Graybill, 9:39m)

(30)

UNDERSTAND-gram	pointing	BORN	SELF+	WASH	DIAPERS
understand-gram	3p.sg.deictic marker	born	2P.SG-independent-emphatic	wash	diapers
	_____raised eyebrows				
(hands out)	FOLDING	SELF+			
	folding	2P.SG-independent-emphatic			

‘With the understanding when she is born, you yourself will wash diapers, and fold clothes by yourself’ (Patrick Graybill, 26:17m)

(31)

R: SELF+	COME	NARRATE	SELF++ ⁴	OK
L: SELF+				
2P.SG-independent-emphatic	come	narrate	2P.SG	ok

‘You yourself come here and narrate about yourself, ok’ (CHALB,10:14m)

These examples illustrate that **SELF+** functions as an emphatic marker denoting that the referent will execute actions independently. As an imperative and/or assertive pragmatic discourse marker, **SELF+** clauses co-occur with a verb and **SELF+** is positioned after the verb it modifies as illustrated in example (29). These clauses express commands, and do not typically contain expressed subjects. Regarding the pragmatic use of **SELF+**, it can be realized alone and is directed toward to the given referent in 1st, 2nd, and 3rd person. **SELF+** may be expressed either as singular seen in examples (29), (30), and (31) or plural (refer to example (7)). The function of **SELF+** is more than just an emphatic marker but also signals the independent ability imposed on the referent and is a pragmatically heavy marker, making it appropriate to classify **SELF+** as an emphatic type.

3.3 **SELF** as a chunking unit. Constructions of two or more signs that undergo phonological reduction in schematic, fused constituent structures leading to changes in semantic/pragmatic uses are described as *chunking units*. The higher degree of phonological reduction in high frequency collocations suggests frequency effects, leading to emerging chunking units similar to English’s *dunno* as discussed in Bybee and Schiebman (1999). Bybee and Schiebman identify *dunno* as semantically “I don’t know” but in highly reduced phonological form and as functioning to illustrate a strongly pragmatic use associated with high subjectivity. In this set of constructions, I propose that **SELF** in collocation with certain signs undergoes frequency effects

⁴ The use of **SELF++** in this construction appears to be predicate oblique because NARRATE is an intransitive verb.

and functions as a chunking unit similar to *dunno*, which contain semantically distinct phonological units capable of isolating from each other, e.g., *I don't know*.

To evaluate SELF as a chunking unit, I observe schematic constructions that demonstrate high phonological reduction. A constructed example of ASL chunking unit grammaticized from two isolated signs is given:

(32)

THINK-SELF+
 think-2P.SG
It is up to you'

(33)

THINK SELF++
 think 2P.SG
'You think for yourself'

Comparing these two examples, the chunking unit of THINK-SELF+ experiences high phonological reduction in movement. THINK-SELF+ realizes one continuous movement directed to the target referent while the construction of two isolated signs: THINK SELF++, briefly moves toward the referent twice. The pragmatic use in the constructions differs because the chunking expresses the pragmatic function that the final decision is up to the referent but in the fully lexicalized construction, it implies that the referent undergoes a mental activity to take things into consideration that may affect her alone.

Due to very limited data, analyzing frequency effects on SELF constructions by token and type counts is not possible at this point; however, I find five constructions with a preposition adjuncted with SELF++ that may suggest evidence for emerging chunking units. Three examples, (34), (35), and (36) are illustrated here:

(34)

LEARN MORE ABOUT SELF++
 learn more about 1P.SG

'I learn more about myself' (Patrick Graybill 38:56m)

(35)

pointing	DON'T-KNOW++	MUCH	ABOUT	SELF++
1P.SG.deictic marker	don't know	much	about	1P.SG

'I don't know much about myself' (Patrick Graybill 18:35m)

(36)

REAL THEATRE **FOR SELF++** pointing
really theatre For 1P.SG 1P.SG.deictic marker

'Really, theatre is for myself, me'(Patrick Graybill 1:36m)

In these constructions, SELF++ is chosen to realize a first person singular denoting there is high subjectivity. Four out of five constructions show evidence that there is an emerging morphosyntactic fusion of a preposition, ABOUT, and SELF++. The construction reveals a highly phonologically reduced ABOUT with SELF++. While the full realization of ABOUT uses two hands with a dominant hand circling around the non-dominant hand, the phonological reduction of ABOUT in examples (34) and (35), is expressed by the dominant hand with a tight circular movement. In example (36), a construction is realized with a phonologically reduced FOR preceding SELF++. These findings suggest these constructions are experiencing gradual emergent schemas of [ABOUT + SELF++] and possibly [FOR + SELF++], which provides linguistic evidence that chunking units behave as constituent structures in ASL.

4. DISCUSSION.

The literature on ASL linguistics assumes that ASL has a reflexive pronoun, glossed SELF, signed with a closed fist with an extended thumb directed to a conceptualized or physical referent. Contrary to the assumption that SELF functions as a canonical reflexive pronoun, my data shows that it rarely behaves as a reflexive. Instead of functioning as a reflexive, SELF is distributed in three key grammatical functions: reflexives, emphatics, and SELF as a chunking unit. Interestingly, ASL's SELF parallels English *-self* in grammatical functions of reflexives and emphatics. However, it appears that the English reflexives are more frequently used than ASL, but this may be explained due to the difference in language modality. ASL exploits visual-spatial parameters to convey intrinsic complexities in its morphosyntactic expressions that may not require marked reflexive pronouns, unlike those seen in English.

Results from the current analysis reveal that SELF does not function solely as a reflexive but has three main grammatical functions: reflexive, emphatic, and chunking unit. Data shows that reflexives are realized with SELF+ and SELF++. For emphatics, SELF++ and SELF-ONE++ are realized in subject position, while chunking units contain only SELF++. This suggests that grammatical functions govern the choice of SELF phonological forms.

The distribution of the phonological forms of SELF+, SELF++, and SELF-ONE++ is specialized in semantic uses. SELF+ typically functions as an independent emphatic to pragmatically mark the referent's independent ability to execute the action. On the other hand, to disambiguate the target from other potential referents, SELF++ and SELF-ONE++ are chosen, but SELF-ONE++ carries a heavier focus mark on the referent than SELF++. The formal properties of each phonological form are described below:

TABLE 2. FORMAL PROPERTIES OF SELF

	Number	Person	Proximateness	Functions
SELF+	sg, pl	1 st , 2 nd , 3 rd	proximate, obviate	independent emphatic, reflexive
SELF++	sg <i>pl: different phonological form</i>	1 st , 2 nd , 3 rd	proximate, obviate	all emphatics (not independent), reflexive, chunking unit
SELF-ONE++	sg	2 nd , 3 rd	obviate for 3 rd p	all emphatics (not independent) with focus marker

These findings present plausible evidence to reinforce the notion that the three forms of SELF are not reflexive pronouns as they are canonically defined but carry out a range of different grammatical functions. The remaining section will specifically discuss how SELF is realized and how it functions within different constructions: number; person; proximateness; then I will suggest directions for future studies.

4.1 Number. The realization of both singular and plural diverges in the three forms. SELF+ with a singular movement expresses both singular and plural while SELF++ and SELF-ONE++ only express singular. SELF+ can direct the movement toward the signer’s chest to express 1st person singular. For 1st person plural, SELF+ moves continuously from one shoulder to another and denotes inclusiveness (the speaker is a part of the group present in the discourse context). Non-1st person singular is depicted with the singular movement directed to the addressee or conceptualized referent. Non-1st person plural directs the movement in a horizontally-continuous arc movement toward present addressees or conceptualized referents in the signing space. Non-1st person plural expresses that the speaker is exclusive from the referred group. A plausible explanation why SELF+ can either be singular or plural is because the phonological form moves fluidly unlike the forms seen in SELF++ and SELF-ONE++.

Both forms, SELF++ and SELF-ONE++ only express singular, not plural, which may be motivated by their phonological forms, but SELF++ may express first person plural, ‘*ourselves*’, ‘*ourselves*’, with a different phonological form consisted of an arc movement from shoulder to shoulder. However, these forms could refer to a collective entity like a group of students or a mass of various fruits. To explore more on how singular and plural expressions will require a large data corpus of various genres to seek how they are realized.

4.2 Person. All three forms express person by directing SELF toward to the target referent in discourse context. SELF+ and SELF++ express 1st, 2nd and 3rd person, but SELF-ONE++ appears to realize only 2nd and 3rd person. The question arises about the absence of 1st person in SELF-ONE++ merits a closer observation and is contrasted with SELF++ to evaluate the function of proximateness with respect to person which will be discussed in the following section.

4.2.1 Proximateness: proximate vs. obviate. An interesting observation arises about the use of SELF++ and SELF-ONE++ in respect to the selected referent’s physical surrounding in the discourse context. If the referent is physically presented, hence is proximate in discourse context,

then it is expressed with SELF++. If the referent is not physically presented in the immediate surroundings of the discourse context between the speaker and addressee, then the referent is obviated and is marked with SELF-ONE++. This finding illustrates that there is a function to denote proximate and obviated properties of the referent as third person expressed in SELF that diverge in the usage for SELF++ and SELF-ONE++.

Observing the behavior of SELF++ and SELF-ONE++ in constructions, they appear to be semantically similar; however, they diverge in their syntactic patterning in person. My proposal is that SELF-ONE++ carries two functions. First, the selected index finger of SELF-ONE++ marks the focus on the referent in order to emphasize and disambiguate the selected referent from other potential referents in the discourse. Although highly frequently seen in SELF-ONE++ as 3rd person, it is possible to see SELF-ONE++ with the 2nd person; however, I predict the function is to disambiguate rather than marking the referent proximate or obviated with respect to the physical context.

Second, SELF-ONE++ indicates that the selected referent, as a third person, is obviated from the physical context between the speaker and addressee. Although SELF-ONE++ appears to be marked for third person, I must caution that SELF++ does not necessarily mean that the selected referent is within the physical discourse context because it may also imply the referent is obviated. While SELF++ is not always marked 2nd person but also may be in 3rd person, discourse context will disambiguate the semantic-syntactic function for SELF++.

To illustrate my hypothesis that SELF-ONE++ is used when the referent is not in immediate physical context but as obviated referent, I present four constructed examples with 1st and 3rd person referents:

(37)

SELF++	TAKE-HOST	PARTY
1P.SG	host	party

'I myself host the party'

(38)

SELF++	TAKE-HOST	PARTY
3P.SG	host	party

'S/he herself hosts the party'

(39)

**SELF-ONE++	TAKE-HOST	PARTY
1P.SG	host	party

(40)

SELF-ONE++	TAKE-HOST	PARTY
3P.SG	host	party

'S/he herself hosts the party'

A possible explanation why 1st person SELF-ONE++ is not (or is rarely) realized is that SELF-ONE++ is not typically expressed to overtly disambiguate the signer as 1st person singular compared to potential higher disambiguity for 3rd person singular constructions. To test the hypothesis, we will benefit greatly from token and type frequency analyses on a larger corpus to observe the distribution of SELF++ and SELF-ONE++ for person and inclusiveness/exclusiveness. However, the preliminary analysis shows that SELF++ and SELF-ONE++ appear to be semantically similar except for the presence of the non-dominant index finger functions as a focus marker by specifying the discussed referent in the clause.

4.3 Future studies. For future studies, the use of SELF needs to be investigated with a much larger corpus by doing token and type frequency analysis to find the distribution of grammatical functions and phonological forms of SELF. Frequency analyses will further illuminate the preliminary finding presented here that the use of SELF as a reflexive pronoun is minimal in ASL. Although SELF as a reflexive is minimally used, it raises a question as to how ASL users deal with a visual-spatial language that construes events containing a participant to co-refer to the same entity that is acted upon in event constructions. A detailed analysis on plain, inflecting, and high iconic complex verbs with of two semantic role participants will provide interesting findings on how the phonological form of different verbs governs the expression of reflexives with SELF and without SELF. Current data show that the usage of emphatics positions SELF in the subject, and it raises a question if SELF emphatics can be realized in the object position or is constrained only in subject position, which will explain more about the function of emphatics in general. In addition, examining how SELF expresses person, number, and proximateness enriches our understanding about SELF.

5. CONCLUSION.

This study demonstrates that SELF is not a reflexive morpheme to mark co-referentiality as previously thought but instead exhibits a range of functions. The examination on SELF provides linguistic evidence that grammatical morphemes have a range of functions, which encourages us to investigate more on ASL grammatical morphemes.

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In one characterization of the inverse voice, the construction marks an unexpected referent topicality ratio, where an event's core non-agent is higher in topicality than the agent. Many view discourse pragmatics (i.e., a participant's persisting involvement) as the source of this topicality. Yet, publications on Sahaptin (Penutian, Sahaptian) have not ruled out the contribution of semantic factors in motivating selection of the inverse. Additionally, the methodology of the topicality theory has been primarily limited to text-based heuristics. Reported on here is an experimental examination of the Umatilla Sahaptin inverse voice, involving two native speakers' narration of picture books, and testing a revised model of topicality. Characters in these stimulus stories were manipulated for global frequency, animacy, and individuation. Results showed global frequency and animacy are equally strong predictors (in contrast to individuation), and the combination of these two factors better account for Umatilla inverse selection than the standard text-counting measures.

1. INTRODUCTION.

Of the family of constructions labeled inverse by one linguist or another, one subtype has been dubbed the INVERSE VOICE (Gildea 1994). These are specially marked bi- or trivalent 3→3 clauses (required by some to be syntactically transitive), and not grammatically obligatory, but rather a discourse alternative to the active/direct voice, hence their categorization by some as a voice construction. In this functional definition of the inverse voice, the construction signals a reversal in the usual topicality ratio for an event's agent and core non-agent, such that the non-agent is more ACCESSIBLE in memory and more attentionally IMPORTANT than the agent (Givón 1994, based on work of Cooreman 1985). Taking Umatilla Sahaptin (Plateau Penutian, Sahaptian) as a case study of conditions for inverse voice usage, this paper proposes a revision of Givón's referent topicality model for voice selection.

The topicality theory's attendant methodology for categorizing voice constructions has primarily involved the text-based heuristics REFERENTIAL DISTANCE and TOPIC PERSISTENCE (Givón e.g., 1983, 1994), and the present study of Umatilla also begins in this manner. As will be

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reported here, those results exhibit considerable residue, especially when held to a clause-by-clause examination of Givón's textual distance values. Such results demonstrate both the limitations of the text-counting methodology, and the inadequacy of the standard discourse-pragmatic measures in fully accounting for voice distribution in this language. If we consider referent topicality to be, generally speaking, the relative status of event participants in a speaker's mind and reflected in their discourse realization, what features earn a particular referent greater discourse status? Specifically, what factors comprise referent topicality for a Umatilla speaker? Given more controlled, language-external methodology, will speakers' performance accord with a new topicality model, based not only on a pragmatic parameter of a narrative but also including extra-textual, semantic parameters?

This study develops and tests such a revised model via two native speakers' narrations of stimulus stories. In contrast to Givón's approach, this model is predictive on a per-clause basis. In this 3x3 design, characters in two wordless picture books are manipulated to have differing levels of GLOBAL FREQUENCY, ANIMACY, and INDIVIDUATION. A character chosen as the syntactic O and ranking higher than the chosen syntactic A on any of these three factors is hypothesized to precipitate a Umatilla description using the inverse voice. The reverse topicality ratio, and equal ranking of O and A are both predicted to trigger an active/direct clause. Results presented here show that Global Frequency and Animacy are equally influential and both strong predictors, and each have more impact on speakers' choice of the inverse than Individuation. Moreover, these first two factors in combination provide a more thorough account of the so-called pragmatic inverse in this language than do the (more local) referential distance and topic persistence. Results suggest the inadequacy of a solely pragmatic topicality theory for voice selection.

2. TOPICALITY THEORY OF VOICE.

The functional-typological theory of voice assumed here classifies constructions primarily according to the relative topicality of Agent versus Patient, and secondarily in terms of textual frequency. Such an approach originated with Cooreman for Chamorro (1985), and was later articulated by Givón as a cross-linguistic theory (1994). In defining the active/direct, inverse, and passive voices, the active/direct is considered the default, expected topicality ratio, where the agent is naturally more topical than the patient (cf. MacWhinney 1977). It should be the most frequently used voice construction in a given language. The inverse represents a reversal of this norm, where the patient is more topical than the agent, but the agent is still somewhat topical, and not structurally suppressed. It is typically less frequent than the active/direct. The even more infrequent passive indicates a patient much more topical than the agent, which is formally at least partially suppressed.

The theory assumes voice selection is driven by pragmatics, and topicality is evaluated by measuring a referent's persisting involvement in the discourse. Though Givón originally considered "semantic information" in gauging referent topicality (1983:11), he set this dimension aside in developing the text-count measures, assuming that the pragmatic factors chosen play a "dominant" and "decisive" role in topicality (1983:12). Most studies in Givón's 1994 volume disregard any influence of semantics, limiting their voice examinations to clauses where the agent outranks the patient in animacy, number, and partivity. Yet these are common saliency hierarchies noted to motivate grammar in many realms, including other types of inverse constructions – see work on obligatory INVERSE ALIGNMENT (so termed by Gildea 1994), for example, systems described by Dahlstrom (1991), Hale (1973), and Rhodes (1994). Thus the

present work explores the potential contribution of two semantic factors in Umatilla voice selection.

3. STRUCTURAL PROPERTIES OF THE INVERSE IN UMATILLA SAHAPTIN.

3.1. General Structure of Sahaptin. As described by Rigsby and Rude (1996:673-679), word order in Sahaptin is flexible and pragmatically determined. Constituents may be discontinuous, and full nominals (S, A, and/or O) are frequently omitted.¹ Grammatical relations are signaled by case marking and pronominal verb prefixes, and alignment is syntactically largely nominative-accusative, but also includes ergative and absolutive cases.

3.2. Active/direct and Inverse Voice Morphosyntax. Detailed below is the morphology of Umatilla active/direct and inverse clauses. Note that the inverse is marked by unique verbal prefixes (which also distinguish number of the A argument), as well as obviative.ergative case on the singular A nominal.

TABLE 1. AGREEMENT IN 3→3 CLAUSES²

Voice	A Status	O Status	A Case	O Case	Verb Prefix
DIRECT	3SG.PRX	3SG/PL.OBV	--	ACC	3NOM <i>i-</i>
INVERSE	3SG.OBV	3SG/PL.PRX	OBV.ERG <i>-in</i>	ACC	INV <i>pá-</i>
DIRECT	3PL.PRX	3SG/PL.OBV	--	ACC	3PL.NOM <i>pa-</i>
INVERSE	3PL.OBV	3SG/PL.PRX	--	ACC	PL.INV <i>patá-</i>

The Umatilla inverse is syntactically transitive and non-promotional, as evident when comparing it in example (1)b to the active/direct situation in (1)a, given here:³

- (1) a. *íwínš i-tuxnán-a yáamaš-na*
 man 3.NOM-shoot-PST mule.deer-ACC
 ‘The/a man [PRX] shot the/a mule deer [OBV]’
- b. *íwínš-in pá-tuxnan-a yáamaš-na*
 man-OBV.ERG INV-shoot-PST mule.deer-ACC
 ‘The/a man [OBV] shot the/a mule deer [PRX]’

¹ A = first core argument of a transitive verb (transitive subject); O = second core argument of a transitive verb (primary object); S = single argument of an intransitive verb (intransitive subject)

² Table is modified from information in Rigsby and Rude, 1996:676, as inverse constructions can occur with a plural O.

³ ACC = Accusative ; INV = Inverse ; NOM = Nominative ; OBV = Obviative status ; OBV.ERG = Obviative.Ergative case ; PRX = Proximate status; PST = Past Tense. Examples from Rigsby and Rude 1996:676.

4. INVERSE SELECTION: TOPICALITY FACTORS AND METHODOLOGY.

Now we will consider: What specific referent topicality factors condition a Umatilla speaker's selection of (1)b rather than (1)a during narrative? In seeking a valid, reliable measurement of referent topicality, the standard text count methodology will be evaluated against a controlled narrative elicitation.

4.1. The Text Count. Topicality in the Cooreman-Givón model is essentially topic continuity, comprised of the assumed level of a referent's cognitive accessibility for the hearer, and the referent's level of importance or prominence in the speaker's next several utterances.

4.1.1. Memorial accessibility and referential distance. Referential distance (RD) is intended to represent (the speaker's estimation of) the current strength of activation for a referent in the episodic memory of the hearer (Givón, e.g., 1983, 1994). The values 1, 2/3, and >3 are obtained by counting the number of preceding clauses until reaching the last event participation by the referent, regardless of semantic role, syntactic role, or manner of linguistic encoding. A lower RD value indicates higher topicality (Givón 1994).

4.1.2. Attentional importance and topic persistence. Topic persistence (TP) is instead a cataphoric measure, intended to represent a referent's cognitive activation or attentional prominence in the speaker's mind when planning the next several utterances (Givón, e.g., 1983, 1994). A TP value of 0, 1, 2, or >2 is assigned, based on the number of a referent's event participations in the next 10 clauses (Givón 1994). A higher TP value indicates higher topicality. For a given voice construction, a researcher then calculates the frequency distribution of RD and TP values for the separate groups of Agents and Patients in a text, as well as mean values per group. This gives a very general profile of a construction's core referents as more or less topical.

4.2. A Umatilla Text Count. A preliminary examination of Umatilla inverse voice extended the work of Rude (1994), who had described the inverse via RD and TP values for 1920s texts in a Northwest dialect of Sahaptin.⁴ The Umatilla text count reported here utilized a small corpus of two previously recorded texts (217 clauses; 64 eligible for analysis). RD and TP values were figured for referents in active/direct, inverse, and passive clauses. Only bi- and trivalent clauses with third person core arguments were considered, and the grammatical A and O were treated as targets (following Rigsby and Rude 1996:677 and Rude 1997b:331), rather than Agent/Patient (as mentioned in Blackburn Morrow 2006, greater residue was found when counting for Agent/Patient).

4.2.1. Results. Results generally support Givón's theory and Rude's findings for Northwest Sahaptin. On average, grammatical Os in inverse clauses exhibited a lower RD and higher TP (thus, greater topicality) than As (38% of As and 81% of Os were at the lowest RD value; 24% of As and 62% of Os were at the highest TP value). The opposite was true on average for active/direct clauses; more As than Os had high topicality values (69% of As and 40% of Os were at the lowest RD; 63% of As, 49% of Os at highest TP). The method also distinguishes

⁴ Rigsby and Rude's 1996 sketch of Sahaptin instead describes the inverse voice as operating within a (very local) syntactic domain: when the O of the current clause is co-referential with the A/S of the preceding direct clause. However, textual exceptions to this account are common.

inverse from passive clauses: the As in inverse clauses were still fairly topical based on RD and TP measures.

4.3. Shortcomings of the Text Count. However, as evident in Rude (1994) and many other studies using this methodology, a large amount of residue remained. When looking at the topicality ratio in individual clauses, 32 of 35 active/direct clauses actually ran counter to the A>O profile in RD and/or TP; 17 of 21 inverse clauses proved counter to the A<O profile in RD and/or TP (cf. Dryer 1994:81, for the Kutenai inverse). This situation provokes the question: how well can we predict or account for speakers' usage by these means?

Discontinuity proved to be the main source of residue. RD and TP measures are hindered by features of the texts, such as a large number of characters, including insertion of a first person narrator (cf. *WORLD SHIFTS*, Clancy 1980); shifts between set versus member mentions (cf. Grimes 1975); multiple temporal viewpoints; and frequent direct quotes (often to advance the storyline) with speech act participants in core roles. Other limitations of the text count method include: (a) a lack of per-clause predictive power; (b) an assignment of reference too dependent upon the interpretation of the linguist (who may well be a cultural outsider); and importantly, (c) the amount of residue suggests other factors may also contribute to referent topicality.

4.4. Controlled Narrative Elicitation. As the standard pragmatic factors and methodology of the topicality theory provided insufficient characterization of the Umatilla inverse voice, an experimental test of an alternative pragmatic factor and some likely semantic factors was undertaken. The study asked contemporary native speakers of Umatilla to narrate stimulus picture stories. The factors chosen for the revised model of topicality were (a) Global Frequency, to replace the more local measures like RD and TP (c.f., e.g., Forrest 1994 for Bella Coola; Macauley 2000 for Karuk); (b) Animacy (c.f., e.g., Kinkade 1990 for Upper Chehalis and Cowlitz; O'Connor and Deal 2004 for Nez Perce; also Rigsby and Rude 1996 and Rude 1997a for animacy effects elsewhere in Sahaptin grammar); and (c) Individuation (c.f., e.g., C. Thompson 1989:157 for Navajo; and Blackburn Morrow 2006:55 for paradigmatic gaps in Sahaptin grammar). The perceptual saliency of the latter two (semantic) parameters makes them likely to impact speakers' mental organization of an event for linguistic packaging (cf., e.g., Langacker 1999, Levelt 1989, Tomlin 1995).

4.4.1. Parameters. In this 3x3 design, the character selected as an event's grammatical O ranked higher than, lower than, or equal to the event's selected A on the three topicality parameters: (a) Global Frequency (or GF), operationalized as the character's total number of appearances throughout the story regardless of event participation; a single value per character; (b) Animacy (or An) defined here as the "logical", not linguistic, values of human > animal > inanimate; and (c) Individuation (or I), again the "logical", not linguistic, values of singular > plural > mass/collective. Note the third parameter differs from Hopper and Thompson's use of the term individuation (1980).

4.4.2. Hypotheses. Employing a (more sensitive) per-clause analysis, the study predicts that direct voice will be used to describe events where O equals A on all factors, and where O < A on any one/more of the factors while the others are held equal. However, it is hypothesized that speakers will select inverse voice to describe the reverse scenario, events where O > A on any one/more of the factors while the others are held equal. The study is exploratory in terms of any

relative ranking of factors. Passive voice is not expected in response to the stimuli, as it rarely occurred in the text count, and only with non-referential agents (cf. Rude 1994).

4.4.3. Materials. Two wordless picture books were created for this study, where the characters were designed to differ by GF, An, and I, and events were designed to provide various participant combinations. Nearly all permutations of the 3 factors by 3 levels (Higher, Lower, Equal) were expected to be elicited by these two stories in combination with two other instruments (data from the latter were not analyzed). Speakers orally narrated events in the pictures after viewing the story once for comprehension. For expository purposes, following is an example of the predicted response to a stimulus event:

- (2) Picture: Dog is beginning to release from his mouth a baseball that he has fetched. His mouth is positioned over boy's outstretched hand.
 Predicted grammatical relations: [dog]A GIVE [boy]O [ball]OBLIQUE
 Voice: O > A in Animacy, and Global Frequency and Individuation are equal between the two characters, so speakers are expected to use inverse voice.

4.4.4. Participants. Study participants are two native speakers of Umatilla Sahaptin.⁵ Both are members of the Confederated Tribes of the Umatilla Indian Reservation (near Pendleton, OR), and were aged in their early to late 70s at the time of participation.

4.4.5. Analysis. When evaluating the correspondence of voice assignment with event participant topicality ratios, a clause was defined as a finite verb and its arguments (whether these were full nominals or not). Only grammatically transitive clauses with only third person core arguments were examined. Event participant combinations were determined based on a speaker's own event construal (i.e. the particular characters treated as A and O). Proportion of a certain voice construction was considered per total (transitive 3→3) clauses produced, rather than some result per picture (as there may be multiple transitive clauses or only intransitive clauses given per picture). Yet the ultimate topicality ratio of any event participant combination was based on the pre-established values of all characters in terms of GF, An, and I. For example, a clause produced by one speaker to describe the picture in (2) is given in (3), below:

- (3) *ku či k'usik'úsi-in pá-nakwatuχ-áwa-ša áswan-ina k'píit.*
 And this dog- OBV.ERG INV-bring.back-DRTV-IMPF.PRS boy-ACC ball
 'And this dog [A- OBV] is bringing the boy [O-PRX] the ball.' [1:2:3:3:8]

Note that this speaker's event construal involves an O > A in only Animacy, and (as predicted) inverse voice has been chosen for the description.

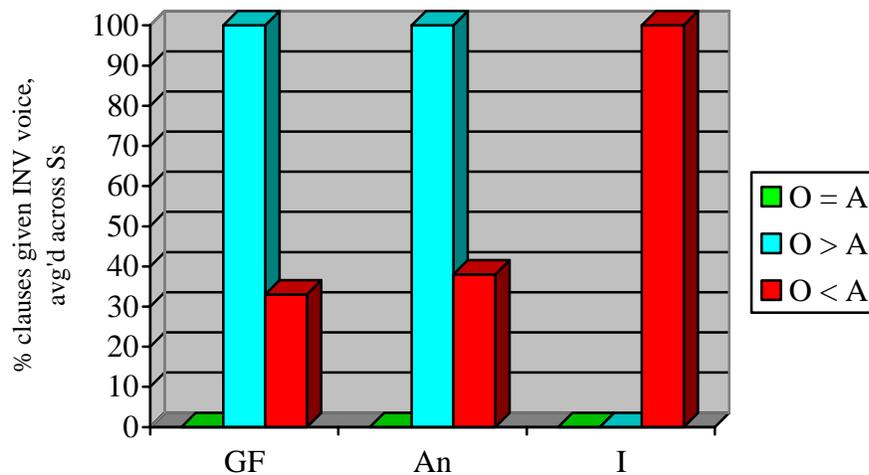
4.4.6. Results. For a given participant combination (e.g., O > A in An and I), the researcher figured the proportion of a speaker's transitive 3→3 clauses which utilized inverse voice. These values were averaged across speakers, for an inverse clause percentage per every type of participant topicality combination realized by speakers. A total of 133 valid 3→3 transitive

⁵ A total of five native speakers participated, but performance of the middle-aged speakers differed markedly from that of the elders reported here (see Blackburn Morrow 2007).

clauses were produced (as one speaker narrated only one of the two stimulus stories), in either direct or inverse voice (elder speakers produced no passives aligning completely with previous structural descriptions).

Figure 1 below presents the effect of factors individually manipulated, in scenarios where the other two factors were equal between event participants.

Figure 1. Effect of individual factors



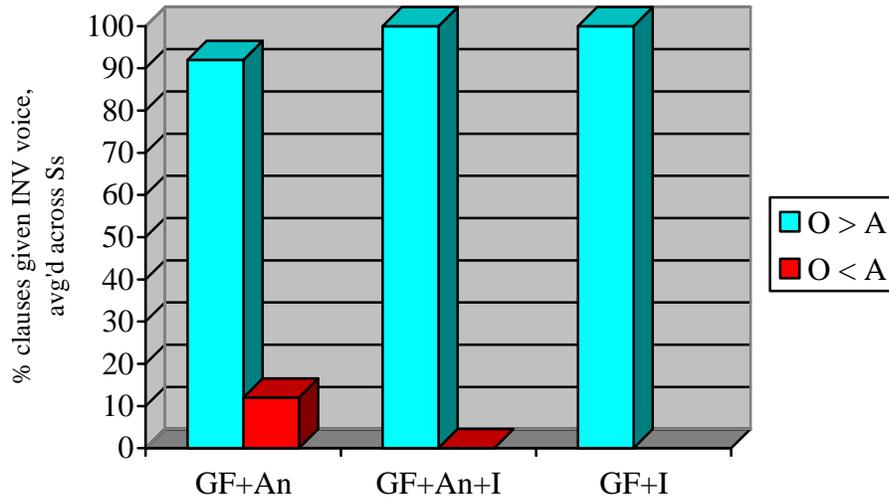
Recall hypotheses: any of the turquoise columns in Figure 1 ($O > A$ on a particular topicality parameter) should elicit 100% inverse voice, while the converse scenario (red columns), and scenarios where event participants are equal on all parameters (green columns), should both elicit 0% inverse voice. We can see that the latter prediction is upheld, as all $O = A$ scenarios were described with direct voice. By looking at the first set of columns on the left, we see that GF impacts selection of the inverse voice much as predicted: when $O > A$, speakers used 100% inverse ($N=5$ clauses), and when $O < A$, speakers used 33% inverse ($N=4$ clauses). Animacy (the middle set of columns) also motivates inverse selection much as predicted, as 100% inverse clauses were used for $O > A$ scenarios ($N=7$). The converse scenario, $O < A$, triggered direct voice the majority of the time, as in (4), below:

- (4) *ku áswan-ø i-winp-a k'usik'úsi*
 and boy-NOM 3NOM-seize-PST dog
 'And the boy [A] seized the dog [O]' 1:2:3:19:50

However, that topicality ratio also unexpectedly elicited 38% inverse clauses ($N=12$). Individuation (rightmost columns) had an effect on voice selection counter to hypothesis here: when $O > A$, none of the descriptions used inverse ($N=3$), and when $O < A$, 100% of descriptions were in the inverse voice ($N=2$).

Figure 2 below presents the effect of topicality factors working in concert, combining to build or diminish an event participant's topicality status relative to the other core participant.

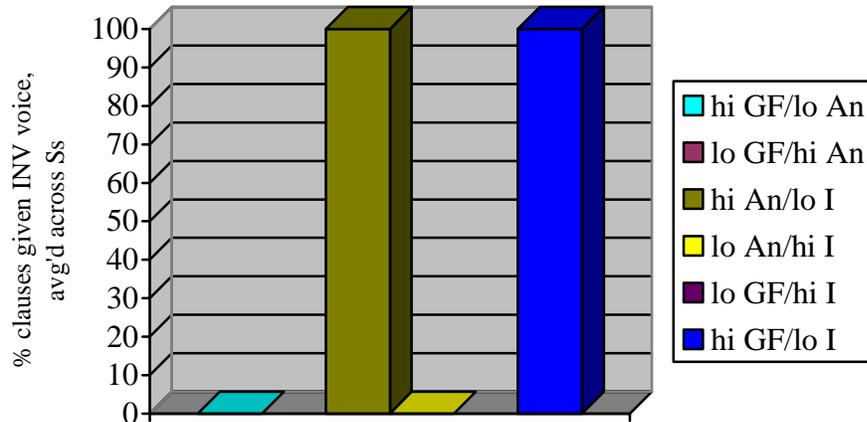
Figure 2. Interactions: Effect of factors in concert



Again, turquoise columns represent scenarios where the O ranked higher than the A on that particular combination of topicality factors, while any factor not listed in those combinations was equal for both event participants (thus inverse voice would be expected). Red columns indicate the opposite scenario, and thus, direct voice (0% inverse) is predicted for these. Although no data were available for An+I (whether O > A or O < A on those factors), and none for O < A in terms of GF+I, factors in concert generally impacted speakers' inverse selection in the manner predicted. We see that an O > A in either GF+An+I (middle turquoise column) or GF+I (rightmost turquoise column) motivates 100% inverse voice description (N=4 and N=1, respectively), and an O > A in GF+An elicits 92% inverse clauses (N=9). The opposite topicality ratio, for GF+An (red column, left side) and GF+An+I (middle), usually triggered the direct voice (12% inverse, N=36; 0% inverse, N=3).

Figure 3 below presents the impact of two conflicting topicality factors on voice selection (with the third factor held equal between O and A).

Figure 3. Interactions: Effect of factors in conflict



Here, “hi” and “lo” levels again refer to the O ranked relative to the A. Note that no data exist for an O argument lower in GF/higher in An than its A argument, nor for an O lower in GF/higher in I than its A. Starting at the left of Figure 3, it appears that GF and An may be equally influential on voice selection, as their effects are cancelled out when in conflict (turquoise; N=14 clauses). Interpreting these interactions while bearing in mind the unexpected results of individually manipulated factors (Figure 1), it appears that an O lower in I may actually contribute to a topical profile, as seen in 100% inverse usage for both hi An/lo I (olive; N=3), and hi GF/lo I (blue; N=2). Likewise, an O higher in I but lower in An does not trigger inverse voice (yellow; N=7), suggesting Individuation either plays no role in voice selection when An is simultaneously manipulated, or it has an effect counter to predictions.

4.4.7. Discussion. While Global Frequency and Animacy generally affected voice selection according to hypothesis, some residue is seen for both factors, where inverse is utilized for participant topicality combinations expected to elicit direct voice. A few of these clauses may be attributed to linguist error in transcription, translation, or interpretation of reference. However, the majority correlate with one of two similar conditions: either (a) one or more characters from the previous clause are replaced by other(s) in the current clause, while a single character maintains involvement across the clausal boundary and through a series of related events; or (b) an otherwise more frequent or animate A is backgrounded or absent from the scene, and the O continues as a participant into what might be termed the next episode. Thus, this usage of the inverse may signal a referent’s episode centrality (rather than story-wide prominence) or cross-episode continuity.

The unexpected results for Individuation might prompt the question: Is a plural or mass participant actually viewed as more salient or topical than a singular participant? However, these data do not solidly support an affirmative answer. Note that when $O > A$ in GF+I (Figure 2, rightmost column), a more highly individuated O does not diminish the effect of the high GF at all (100% inverse voice). Additionally, post-hoc analysis of the 5 clauses responsible for the surprising Individuation result reveal that they are produced consecutively by the same speaker,

and all describe a set of related pictures (Story 1, Pictures 22-24; see Blackburn Morrow 2006:110). In the first scene, two jackrabbits are the continuing participant, while a deer is the newly introduced character. A cataphoric measure of importance (cf. Givón's topic persistence) does not predict voice selection in this case, as the deer persists through the next few pictures after this excerpt (the rabbits' role ends here), yet the deer is given obviative status in all 5 clauses, and the rabbits, proximate status. Possibly this employment of the direct/inverse alternation is another signalling of cross-episode continuity (cf. the residue in GF and An), or it marks the referent's recency of involvement (cf. Givón's memorial accessibility/referential distance). Regardless, such performance under these conditions suggests Individuation is too weak a factor to determine voice selection alone. In the absence of Animacy or Global Frequency distinctions, it appears that this speaker treats the accessible character as proximate, and the newly introduced as obviative.

4.4.8. Future directions. For a more direct comparison of Givón's local accessibility/attentional importance model with the Global Frequency/Animacy model presented here, one could apply the RD and TP measures to these data. Also, in order to strengthen the claims made for Global Frequency and Animacy, and to confirm Individuation's lack of impact, the narrative elicitation could be repeated with similar instruments.

5. CONCLUSION.

This study supports for Umatilla Sahaptin the general notion that the inverse voice marks an O>A in topicality. However, this research also demonstrates the solely discourse-pragmatic view of referent topicality, inherent to Givón's theory of voice (1994), insufficiently describes voice selection in Umatilla. A semantic factor contributes equally to topicality in these data, as a combination of Global Frequency and Animacy enables a more thorough account of this inverse voice than do the more local measures of referential distance and topic persistence. The improved characterization of the Umatilla construction afforded by this revised model and experimental methodology suggests that similarly controlled data sources and precise factor examinations should be employed for other languages with inverse voice.

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ASSERTIVE AND COMMISSIVE SPEECH ACT VERBS:
COGNITIVE LINGUISTICS AND PHILOSOPHY OF LANGUAGE

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This paper deals with non-illocutionary uses of assertive speech act verbs. In previous approaches to such uses of speech act verbs (SAVs), which concentrated on commissive verbs like ‘promise’ and ‘threaten’, it was claimed that the non-illocutionary uses of SAVs result from a subjectification process, i.e. describe a subjective, epistemic relation. However, some hitherto neglected uses of assertive SAVs do not conform to this pattern: they involve a metaphorical projection whose source-domain is the basic level of cognitive apprehension where assertive speech acts as direct signs of states of affairs.

1. INTRODUCTION.

Most of the time when we speak we perform, *eo ipso*, illocutionary acts: requests, orders, promises, threats, assertions, and suggestions. Such acts are often reported by means of sentences of the form ‘NP V... that/to_’; verbs used in such reports can be called *speech act verbs* (SAVs). In many cases, it is possible to trace the origin of SAVs back to meanings unrelated to speech (cf. Traugott 1989, 1991, 1997; Traugott and Dasher 2005: 194-207). In this paper, however, I will rather concentrate on the non-illocutionary uses of SAVs of a different kind, illustrated by the following examples.

- (1) These impressive ruins *suggest* that Romans were present here.
- (2) The program of the conference *promises* interesting debates.

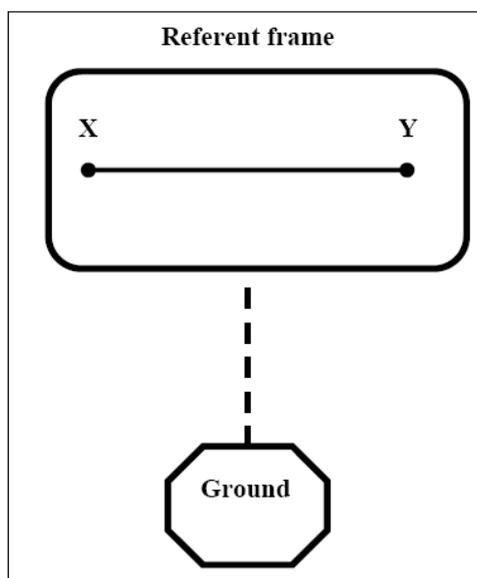
Such uses seem to be always diachronically posterior to the “literal” illocutionary meanings, and thus to result from a semantic shift driven by the conceptualisation of certain components of linguistic interaction (Traugott and Dasher 2005: 204-219; Kissine 2004). The scope of this paper is restricted to synchronic aspects of constructions like (1). The aim is to uncovering the cognitive structure that underlies non-illocutionary uses of SAVs and to relate them systematically to the corresponding illocutionary meanings. Such an undertaking is important in two respects. First, if correct, the claims made below entail specific predictions that can be tested by diachronic and typological studies. Second, the very nature of the phenomenon at hand will force a careful examination of the cognitive underpinnings of speech act interpretation — a crucial matter both for theoretical and historical pragmatics.

This study will rely on two main analytical tools, subjectification and metaphorical mapping, which will be discussed in the next section. In Section 3, we shall see that in order to account for the non-illocutionary of assertive SAVs both dimensions, metaphorical mapping and subjectification, have to be put at work. The central point of the paper is to uncover the tight relationship that unites these tools of cognitive linguistics with more philosophical preoccupations, concerned do with speech act interpretation. In section 5, it is shown that applying the same treatment to examples like (2) solves a problem faced by previous approaches.

2. SUBJECTIFICATION AND METAPHORICAL MAPPING.

2.1 Subjectification. After Langacker (1990a; 1990b), let us define the *ground* as the circumstances that surround the speech event, including its time, its place, and its participants. Let the term *referent frame* stand for the conceptual content of an expression, that is the situation it describes: an entity that belongs to the referent frame is construed objectively, and an entity that remains external to it or “off-stage” is construed subjectively.¹ For the sake of simplicity, I shall assume that in all the examples to be treated here, the referent frame is composed of two entities X (semantic content of the subject phrase) and Y (semantic content of the object phrase), standing in a certain relation (semantic content of the main predicate) with respect to each other. (Nothing important hinges on such a naïve symbolisation of sentence structure.) The ground, or more abstractly, the source of conceptualisation, lies at the origin of the construction of the referent frame, and thus stands in a certain relation to it: however, this relation is not necessarily construed objectively. Such a pattern is symbolised in Figure 1: the main predicate describes a factual, ‘real-world’ relation, symbolised by an unbroken line; although the ground stands in a certain subjective relation to the referent frame, this relation, symbolised by the broken line, remains external to it. However, in some cases, certain subjective relations, originating in the source of the conceptualisation, form part of the referent frame: Figure 2 represents the case where two objective entities of the referent frame are linked by a subjective relation (cf. Langacker 1990b; 1990a: chapter 12; 1991: 215). Such a pattern is a typical result of a subjectification process which gives rise to expressions where “the speaker still remains offstage and implicit, hence subjectively construed, but [where] her presence is [...] a bit more palpable” (Langacker 2006: 20).²

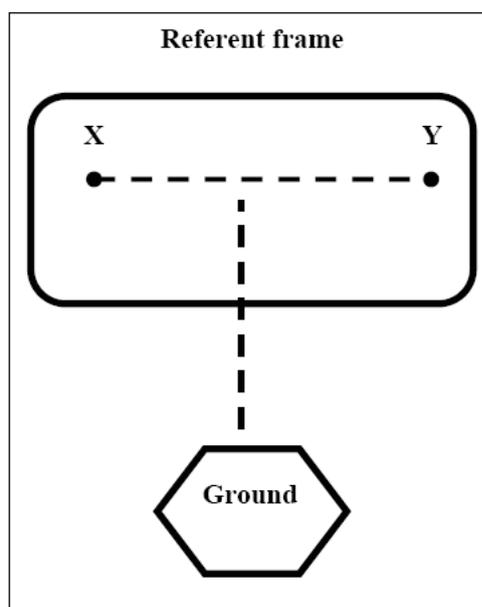
FIGURE 1.



¹ By using the expression *referent frame*, I deliberately neglect Langacker’s distinction between the *overall scope* and the *immediate scope* of predication, which does not seem relevant to our present purposes.

² Langacker thinks of subjectivity as being a gradual phenomenon. This is disputed by Traugott and Dasher (2005: 98), according to whom the degree of subjectivity does not intrinsically belong to linguistic expressions but is rather determined by the context. These disagreements need not concern us here (see Brisard 2006): insofar as they are relevant to the present study, Langacker’s and Traugott’s notions of subjectification prove equivalent (cf. Langacker 2006: 20).

FIGURE 2.



The foregoing discussion is immediately relevant to the main topic of the paper. Previous studies of the non-illocutionary uses of SAVs have concentrated on commissive verbs such as *promise*, *threaten* and *refuse* (Traugott 1997; Verhagen 1995, 1996, 2000; Cornillie 2004). These authors relied on a subjectification approach: it is claimed, in this framework, that speech act reports like (4) trigger the subjective expectation that the event described by the object clause will take place (Traugott 1996; Verhagen 1995, 1996, 2000).³

- (3) John *promised* that he would come.

Figure 1 can be taken as representing this analysis of (4): X corresponds to John, Y to the event denoted by the object clause, the unbroken line to the relation denoted by *promise*, and the broken line to the subjective expectation that the event in question will actually take place. Notice that such expectations originate from the viewpoint of the off-stage conceptualiser — i.e. from the ground — which does not necessarily conflate with the viewpoint of the speaker. As pointed out by Brisard (2006: 47): “[t]he position of this conceptualizer or “self” may naturally correspond with the speaker’s own epistemic stance, possibly by default, but this particular association can be overridden at any time, given that the essence of linguistic subjectivity seems to be about expressing *a* point of view (not necessarily the speaker’s, though)”. As for Figure 2, it is a good representation of what (3) should mean according to the proponents of the subjectification analysis: this time, *promise* describes a subjective relation (broken line) which links X (*conference program*) and Y (*interesting debates*).

In what follows, it is important to keep in mind that the success of the subjectification analysis of non-illocutionary SAVs depends on whether or not the verb under analysis describes a subjective relation. Epistemic modality expresses judgments of the speaker or her commitments to propositions (e.g. Palmer 1986; Sweetser 1990); and it results from an inclusion of a subjective element within the conceptual construal (Langacker 1991: 272-274).

³ Verhagen (2000) claims that this expectation owes more to the speaker-hearer subjectivity, i.e. to the argumentative purposes of the utterance, than to the descriptive properties attributed to the referent of the grammatical subject.

It follows that the subjectification analysis of SAVs ought to assign them an epistemic meaning. In the rest of the paper it will be argued that such an analysis is insufficient in order to account for (1-2), mainly because these example are also metaphorical. But before explaining what is meant by this rather bold assertion, it is worth to get clearer on the notion of metaphorical mapping that will be used here.

2.2 Metaphorical Mapping. In the by-now classical cognitive framework, metaphor is thought of as a projection from a conceptual source-domain into a target-domain (e.g., Lakoff and Johnson 1980; Lakoff 1993; Lakoff and Turner 1989; Gibbs 1994). Conceptual domains emerge from structural organisation of our experiences along some essential dimensions; the metaphorical mapping is said to restructure the target-domain in terms of the source-domain, which means that some experience, usually more abstract, is conceptualised in terms of an already available conceptual domain: the most famous examples are the conceptualisation of reasoning as perception, of life as a journey, or of arguments as buildings, but one finds many more illustrations in the literature.

One of the major claims made by Lakoff is the Invariance Principle which states that metaphorical projections preserve the cognitive topology of the source-domain (1990: 54; 1993: 232; 1998: 60; see also Sweetser 1990: 59-60). Our experiences are constrained, on the one hand, by the characteristics of our perceptual devices, and, on the other hand, by the properties of the perceived situations (for a detailed model applied to vision, see O'Regan and Noë 2001; Noë 2004). Therefore, in what I take to be a plausible interpretation of the Invariance Principle, we can say that for an experience to be conceptually organised in terms of some source-domain, the features intrinsic to the experience to which the source-domain corresponds and those of the experience to be structured by the mapping (the target-domain) must have the same abstract structure.⁴

As pointed out by Barcelona (2003), one can derive from the Invariance Principle a metonymic constraint on metaphorical projection: metaphorical mapping presupposes, on the one hand, that the target-domain is understood in terms of its internal structure, and, on the other hand, that the source-domain has to undergo a metonymic reconceptualisation in terms of its own structure in order to license the structural similarity with the target-domain. This implies that some metaphorical projections involve two domains with the same experiential basis (cf. Radden 2003): in fact, all the mappings we shall encounter in this paper belong to this kind.

3. ASSERTIVE VERBS

3.1 Natural Meaning. Let us get back to (1):

- (1) These impressive ruins *suggest* that Romans were present here. [repeated]

The first thing to note is that in (4) the assertive *suggest* may be replaced by *mean* or *indicate*:⁵

- (4) These impressive ruins *mean/indicate* that Romans were present here.

⁴ I believe that such a formulation makes it plain that, despite what is sometimes claimed (e.g., Indurkha 1992: 82, 125; Leezenberg 2001: 143-146; Jackendoff and Aaron 1991: 332-333), the Invariance Principle accounts for the constraints bearing on any metaphorical mapping between two conceptual domains.

⁵ Of course, *suggest* also has a directive meaning, e.g. in 'John suggested that I get out'. Although the relationship of such uses to assertive ones is extremely intriguing, I believe that they are not relevant to the analysis of (1).

This supports the assumption that what the verb *suggest* denotes here is a natural meaning relation in the sense of Grice (1957). However, before endorsing this view, as we shall eventually do, it is important to come to grips with an apparent objection. If A means naturally B, then A is the cause of B or B is the cause of A (or A and B have a common cause): these clouds mean rain because they cause rain; these spots mean measles because measles is the cause of these spots. Obviously, Rome's presence cannot be caused by the existence of the ruins in question. So the referent frame of (1) should be such that Rome's presence is the objective causal origin of the ruins in question. But, in such a hypothesis, how are we to account for the very strong intuition that the speaker of (1) only tentatively speculates that Rome was continuously present? The question is an intricate one, and we have to move carefully through some details about the interpretation of assertive speech acts before being in a position to solve the apparent clash between the objective meaning just ascribed to *suggest* and its epistemic flavour.

3.2 Direct Perception in Speech. Let me restate the rather uncontroversial fact that, in the same way as performing a directive speech act implies expressing (hence representing) a desire, assertive speech acts are *eo ipso* expressions (hence representations) of the speaker's beliefs. In quite a crude formulation — but sufficient for our present purposes —, representing a belief is just representing a state of affairs that this belief is supposed to “fit” (Searle 1983). In other words, any assertive speech act is also a representation of some informational content.

Gilbert (1993) puts forward what he calls a “Spinozan” view of belief acquisition, according to which any encountered bit of information *p* results in a belief that *p* which can, of course, be subject to subsequent (and, under normal circumstances, easy and almost automatic) revision and reassessment. Gilbert adduces experimental evidence to support his point: when participants are distracted during their exposure to information by another task (like discriminating tones), they tend to report both false and true information as true. This happens independently of whether the experimenter announced that a bit of information is false (or true) prior or after the participants were exposed to it. Gilbert's view provides support to the analysis of utterance interpretation Ruth Millikan has been vigorously defending for more than twenty years. According to Millikan (1984: chapter 4; 2004: chapter 9; see also Recanati 2002), the recovery of the communicated information is, in normal cases, as direct as visual perception — information “directly feeds into the belief box”.

Assertive speech acts are representations of beliefs, which, in turn, represent some state of affairs. In conjunction with Millikan's theory of interpretation, this entails that, at the most basic cognitive level, one processes assertions, suggestions and, in fact, any representation of a belief, as a direct or natural sign of that state of affairs.

3.3 Suggesting and Asserting. This brings us back to the apparent clash between the natural meaning analysis of (2) and its intuitive reading. According to the ‘direct perception’ theories of utterance interpretation, a representation of a belief of S's automatically causes any hearer to form a belief with the same content (although it can be subsequently revised and reassessed). Given the fact that any assertion encompasses the representation of a belief of S's, this ‘direct effect’ should hold for any assertive act. But compare suggesting with attesting. By describing an assertive speech act as a suggestion, one sets up a context where it is unlikely that the representation of S's belief that *p* will be taken by the addressee A as undisputable evidence for *p*. By contrast, when S is said to attest that *p*, it is rather improbable that A should reject *p* without further ado. But how can we accommodate this difference with

the claim that assertive speech acts in general, attesting and suggesting alike, are processed as direct signs of their contents?

A short interlude about the social significance of assertions is in order here. Within an organised society like ours, the role of an assertive speech act cannot be reduced to that of providing information. As many scholars have observed, asserting imposes a kind of responsibility on the speaker; this presumption that assertions are grounded allows other speakers to propagate an assertion or to rely on it for some further assertions (Alston 2000: 117-125; Williamson 1996; Brandom 1994: 157-175; 1983; McDowell 1994). However, the normative requirement of justification does not generalise to every assertive speech act: for instance, S is not committed to having good evidence when she is suggesting or guessing (Green 2005).

It is crucial to see that making manifest one's lack of justifications does not prevent one from being fully committed to the truth of the asserted proposition, in the sense of laying oneself open to blame in case the falsity of the assertion becomes manifest. In other words, putting forward a proposition with reservations, which is a rough definition of suggesting *qua* assertive speech act, does not amount to assigning a low degree of probability to that proposition (Toulmin 1958: 41-53). This difference is brought out strikingly by the following pair of examples.

- (5) It is possible that John was there and it is also possible that he wasn't.
- (6) ?Probably/I suggest that John was there and probably/I suggest (that) he wasn't there.

The "direct perception" theory of assertive speech acts, as sketched above, helps to understand why cancelling one's commitment to having sufficient justifications does not prevent one from being committed to the truth of the communicated content. Cooperative behaviour (for instance, refraining from inducing false beliefs in other minds) is evolutionarily advantageous, because it helps organisms to reach long-term selfish gains, even when these are in competition with desire-dependent short-term selfish gains. Failure to respect cooperative conventions, such as repeatedly misinforming, may lead to the exclusion from the social group, with all the disastrous consequences this may entail (Cosmides and Tooby 1992; Cummins 1996; Ridley 1996; Nesse 2001; Dennett 2003). Consequently, it is understandable that our social practices evolved so as to reprehend individuals who provide grounds for believing erroneous information. This social pressure has two consequences.

First, S is committed to the truth of her assertion. This responsibility cannot be cancelled, because any assertion that *p* automatically prompts A to believe that *p*; moreover, even though beliefs can be reassessed and revised, reassessment is time-consuming and has a certain 'evolutionary cost'. Second, as we have already pointed out, every assertion is likely to serve as a justification for another assertion; this is why S is committed by default to having grounds for her assertion. But, unlike the first, this second responsibility can be attenuated or cancelled — S can explicitly indicate that she has no sufficient justifications for the asserted content *p*, and therefore that she is not to blame for further assertions of *p* by other people.

These assumptions predict that suggestions will be processed, like all *bona fide* assertive speech acts, as direct signs of the states of affairs they represent. The fact that a piece of information *p* is revised or is likely to be revised subsequently to its acquisition does not conflict with the fact that it was acquired as a direct sign — this situation only tells us something about the context of the meaning relation. In order to induce a natural meaning relation, a causal link has to be restricted to a certain epistemic domain: for a causal relation

to mean so-and-so to X, X must have been exposed to it during a period sufficiently long to automatically produce an association of a certain effect with a certain cause (Millikan 2004: chapters 3 & 4). To borrow an example from Dretske (1988: 56-57),⁶ a ringing doorbell means that there is someone at the door, and not that a squirrel is jumping around, because usually squirrels do not depress door buttons. If it were the case that squirrels usually cause my doorbell to ring, then a ringing doorbell would come to acquire a different meaning.

Even if we experience assertive speech acts as natural signs, we also experience a subjective evaluation of the epistemic domain associated with that natural meaning relation (see Millikan 2005: chapters 9-11); the scope of this epistemic domain might cover any metaphysical configuration one can think of or be restricted to a very thin set of propositions. Therefore, our perception of assertive speech acts has both an objective component, i.e. the natural meaning relation, and a subjective one, i.e. the location of that relation with respect to a subjective standpoint; this latter semantic function is what Langacker calls “grounding”. Typically, when an assertive speech act is perceived as a suggestion, the epistemic domain within which the speech act goes proxy for its content is quite slim — revision and reassessment loom large.

Exactly the same analysis applies to (1): a certain state of affairs stands in a natural meaning relation to another one, but this relation has a restrictive epistemic support, outside which it is very likely to be falsified (for a foundational discussion of this kind of non-monotonic epistemic support, see Hempel 1965). The meaning of the non-illocutionary *suggest* thus combines a grounding component with an objective content: in ordinary epistemic constructions like (7), the former role is fulfilled by the modal verb, and the latter by the predicate lying in its scope (Langacker 1990a: 334-336; 1991: 269-275).

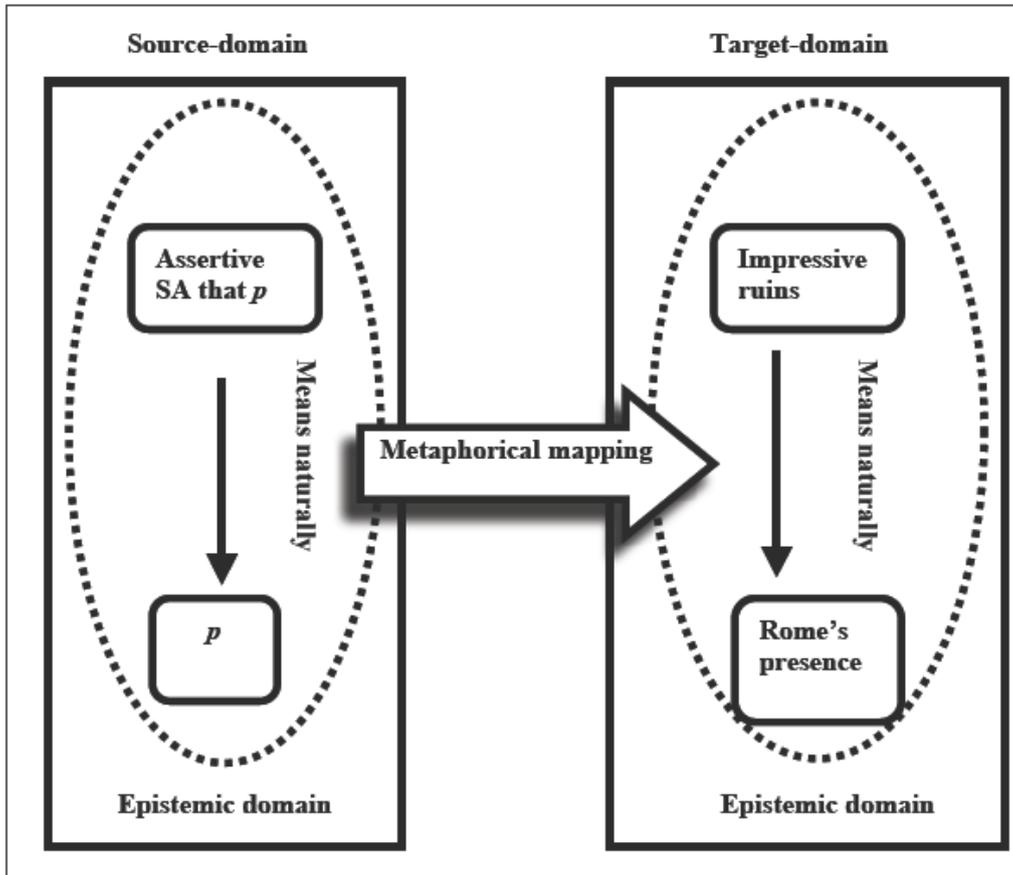
(7) Romans might / must have built this road.

So we have solved our paradox: *suggest* in (1) describes a natural meaning relation which involves the objective construction of a (converse) causal relation, while being grounded on an epistemic domain outside which it can (and probably will) be falsified.

As shown in Figure 3, where the dotted elliptical line provides a spatial representation of the epistemic domain, we can now posit a metaphorical projection mechanism. At a basic level, assertive speech acts are processed as direct signs of states of affairs, this meaning relation being restricted to a certain epistemic domain. It follows that a less specified situation with the same structure, i.e. where an entity naturally means another one, within some epistemic domain, can be restructured in these terms, as is the case in (2). Incidentally, this finding illustrates an important methodological principle: the simple observation that a given expression has an epistemic component does not suffice for claiming, without further assumptions, that this expression is the output of a process of subjectification.

⁶ Dretske, by the way, endorses quite a different picture of meaning whose internal inconsistencies are cogently emphasised by Dennett (1995: 404-407) and Millikan (2004: chapters 3 & 4).

FIGURE 3.



Interestingly enough, some other non-illocutionary uses of assertive SAVs conform to similar restrictions imposed on the epistemic domain by their illocutionary meanings. In (8), *remind* describes a natural meaning relation which is circumscribed to an epistemic domain where the addressees have forgotten the existence of the causal origin of the referent of the syntactic subject.

- (8) These impressive fortifications *remind* us of Rome's presence.

One of the meanings of *warn*, especially when it is followed by the preposition *of*, refers to an assertive speech act such that the conveyed information is crucial for A's action planning. In the example below, *warn* attributes to the referent of the syntactical subject the status of a natural sign of *p* within an epistemic domain where this information *p* can be useful for A:

- (9) [Her] flashing black eyes *warn of* the mass of complexities bubbling beneath the surface.
[M. Caine, *A coward's chronicles*, London: Century Hutchinson, found on the British National Corpus on-line]

Let us sum up the findings of this section. We have seen that, as was the case with directive verbs, the cognitive apprehension of assertive speech acts operates at two levels. At the most basic one, assertive speech acts are perceived as going proxy for the information they convey. At the second level, this natural meaning relation is restricted to some epistemic domain. I have argued that such a complex conceptualisation of assertive speech acts functions as a source-domain for a metaphorical projection whose target-domain is a situation in which some entity is perceived as the natural sign of another within a certain epistemic

domain. Examples like (2) or (8-9) have thus been analysed in terms of metaphorical mapping.

4. COMMISSIVE VERBS.

As mentioned in Section 1, the non-illocutionary use of commissive verbs seems to be very elegantly explained by a process of subjectification grounded on the knowledge of discourse relations. In this section, I shall first point out a problematic aspect of this approach and, next, explain how the structure of intentions and commissive speech acts allows a metaphorical projection analysis that solves that problem. Finally, I shall briefly discuss the contrast between *promise* and *threaten*, which superficially looks like an immediate counter-example to my claims.

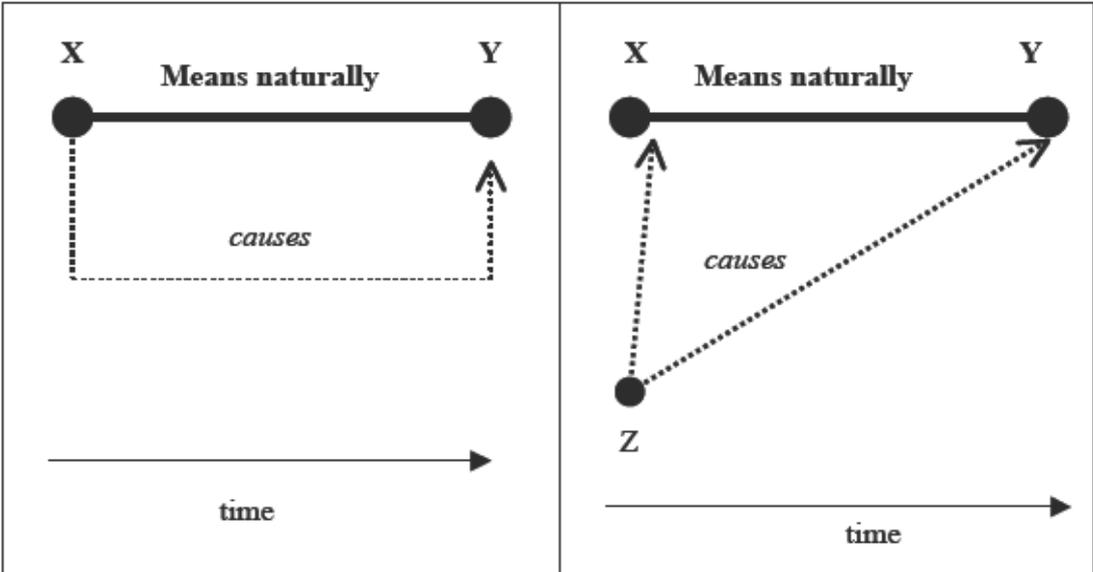
4.1 A Problem with Subjectification. As we have seen, the subjectification analysis assumes that the epistemic uses of *promise* encode our subjective viewpoint on promises — i.e. the expectation that the promised action will take place — which, in examples like (2), is construed objectively. In other words, the non-illocutionary uses of commissive verbs (allegedly) encode the speaker’s subjective expectations about the future.

However, it is much more plausible to consider that non-illocutionary *promise* also encodes an *objective* aspect of the state of affairs described; in fact, the situation seems to be very similar to what was observed about (2) (cf. previous section). In (2), the program is a natural sign of interesting debates, as shown by (10):

- (3) The program of the conference *promises* interesting debates. [repeated]
- (10) The program of the conference *means* interesting debates.

An event or a state acquires such an informational status either because it has a common cause with the future state of affairs that it means naturally, or because it is likely to cause it (see Figure 4). Thus *the program of the conference*, which is, arguably, a metonymy standing for the participants, designates a potential cause of interesting debates.

FIGURE 4.



Furthermore, the subjective attitude linked to commissive speech acts does not seem to correspond to the relation that the non-illocutionary use of *promise* sets between the subject and the object. Certainly, being told that John has promised that *p* can sometimes trigger the expectation that *p* will take place. However, this expectation does not necessarily reach the degree of absolute certainty, for the contingencies of existence might make *p* impossible.

Yet, (11) is very odd, unless it is taken as an example of polyphony where the person who utters (11) dissociates herself from a speaker who would assert that the meeting promises to (will) be interesting, and thus does not endorse the corresponding belief (cf. Ducrot 1984: chapter 4; Sperber and Wilson 1981).

(11) ?This encounter *promises* to be *probably* interesting.

4.2 The Solution. Structurally, the example in (3) is, like every promise, a prediction about one's own action. If we try to apply to (3) the metaphorical projection analysis we used above, it follows from the Invariance Principle that, at some basic level, commissive speech acts are interpreted as reliable signs of a future state of affairs: the program of the meeting is a totally reliable sign of future interest (cf. the unacceptability of (11)).

In promising to *p*, *S eo ipso* represents herself as intending to *p*. If a rational agent intends to *p* (as opposed to merely wishing or wanting to *p*), the probability of *p* (henceforth, $P(p)$), with respect to the set of beliefs against which this intention is formed, equals 1 (e.g. Anscombe 1957: 91-93; Davidson 2001: 83-102; Talmy 2000: 277-279; Malle and Knobe 2001; Grice 2001: 9-10, 51-57, 101-105).⁷ Another interesting fact about intentions is that they are satisfied if, and only if, they cause their own satisfaction (Searle 1983: chapter 3; Malle and Knobe 2001). If I intend to lift my arm and someone else lifts my arm with a rope and a pulley, my intention will not be satisfied (although my desire or my wishing to lift my arm may be satisfied).

Therefore, unless *A* has a reason to believe that *S* is insincere, or unaware of some facts that make the satisfaction of her intention impossible, *S*, by communicating her intention to *p*, induces *A* to think that $P(p)$ equals 1. As I have already mentioned, in socially organised groups, misinformation is an uncooperative behaviour, and thus is very likely to be quite heavily sanctioned. Consequently, representing an intention to do *p* commits the speaker to doing *p*, and so even if her estimate of the world at the utterance time proves to be wrong (Kissine 2005). If *S* makes manifest that the future outcome is far from certain, as in (12), the utterance may have an assertive illocutionary force only, as shown by the contrast between (13) and (14):

(12) I'll *probably* come to your party.

(13) I *promise*, I'll come to your party.

(14) # I *promise*, I'll *probably* come to your party.

It makes great sense to postulate that the representation of an intention is cognitively processed as a deterministic cause for some future state of affairs, i.e. as a natural sign of it.

⁷ This is so, even if at *t* the agent cannot foresee the sequence of bodily movements necessary for the satisfaction of her intention: "We can be clear what it is what we intend to do while being in the dark as to the details, and therefore the pitfalls" (Davidson 2001: 94). In other words, those factors that determine the physical means to reach a goal are different from the factors that lead to the decision to reach that goal (see also Dretske 1988: 131-146; Dennett 2003: 237-240), which has the undeniable evolutionary advantage of allowing agents to keep a goal constant across internal or external variations (Talmy 2000: 277-279).

This cognitive scenario, which corresponds to the leftmost structure in Figure 8, fits in nicely as the source-domain for a metaphorical projection resulting in (2): the source-domain is the cognitive scenario of acquiring information about a future event through the expression of intentions, and the experiential structure of the target-domain is constituted by a state of affairs being a highly reliable sign of another one, temporally located in the future.

4.3 Threaten vs. Promise. Cornillie (2004) points out that while the epistemic use of *promise* describes a state of affairs that is likely to happen, the epistemic *threaten* may be used to refer to a state of affairs whose realisation is not certain. He explains this effect by the fact that reports of threats generate a weaker expectation with respect to the realisation of the event described in the object clause (also Verhagen 2000). Does this observation undermine the analysis offered in the previous sub-section, according to which the epistemic uses of commissive verbs encode the maximal probability?

Clearly, the epistemic use of *threaten* keeps the negative over-tone associated with the illocutionary meaning: in (15) the predicted state of affairs is seen as negative for both S and A.

- (15) This encounter *threatens* to be boring.

And, true, there is no certainty that the encounter will be boring.

However, it is crucial to keep in mind that, like any probability assignment (cf. Hempel 1965), promises are made with respect to a set of propositions, i.e. to an epistemic domain; it is only with respect to a context consistent with $P(p)$ equalling 1 that an utterance may count as a promise. The antecedents of conditionals make such contextual requirements explicit (cf. Lewis 1975; Kratzer 1991):

- (16) John *promised* that he would come if he doesn't get drunk / unless he gets drunk.
- (17) This encounter *promises* to be interesting if Mary doesn't come up again with her favourite topic / unless Mary comes up again with her favourite topic.
- (18) This encounter *threatens* to be boring if no linguist pops up / unless some linguist pops up.
- (19) John has *threatened* Mary to kill her if she doesn't stop dating Peter / unless she stops dating Peter.

Even in the case where the contextual requirement, implicit or made explicit through the use of the conditional, is not very likely to be met, it remains true that the commissive speech act under consideration is successful if, and only if, the context at hand is consistent with $P(p)$ equalling 1. Hence, we have the same situation as with assertive speech acts: promises are perceived as signs of future affairs within an epistemic domain, which is subjectively construed and within which the meaning relation involves the highest degree of certitude.

Now, there is a good reason why the contextual requirements for threats are most of the time less likely to obtain than those for promises. Threats are almost always attempts to prevent an action of the audience (Wierzbicka 1987: 178-179; cf. also Verbrugge *et al.* 2004). As a consequence, in general, the situation in which a threat is kept is harmful not only for the audience, but also for the speaker. However, as emphasised by Nesse (2001), issuing threats entails no less commitment than making promises, and fulfilling one's threats is as important for one's social reputation as is keeping one's promises. As shown by (20), it is impossible to threaten without postulating that $P(p)=1$ (provided some conditions obtain).

- (20) ? John *threatened* Mary to *probably* kill her if she doesn't stop dating Peter.

The same holds for the non-illocutionary uses of *threaten*: the referent of the subject indicates that the situation described by the object clause will necessarily take place if some conditions obtain.

(21) ? This encounter *threatens* to be *probably* boring.

Therefore, promises and threats, or the non-illocutionary uses of *promise* and *threaten*, do not differ at the level of the objective meaning relation — which, in both cases, involves the maximal probability —, but at the level of the subjective epistemic domain, i.e. of the grounding relation. The epistemic domain includes more possible situations with promises and the non-illocutionary *promise* than with threats and the non-illocutionary *threaten*.

This shows that the non-illocutionary use of *threaten* is not a counter-example to the claim made in the previous sub-sections. Non-illocutionary uses of *promise* and *threaten* describe a natural meaning relation between two states of affairs, such that (a) this relation involves the probability of 1 with respect to the background knowledge, (b) the first state of affairs A is temporally anterior to the second B; A either being the cause of B or having a common cause with B. Such meanings originate from a metaphorical mapping whose source-domain is the cognitive experience of promises and threats as deterministic causes of states of affairs. Like *suggest* in (1), both *promise* and *threaten* also have an epistemic dimension insofar as they ground the natural meaning relation within an epistemic domain; but this subjective aspect does not suffice to support a subjectification analysis. This is not to say that the previous analyses of commissive verbs in terms of subjectification are to be dismissed: some commissive SAVs might have genuinely epistemic non-illocutionary uses. But, however things turn out to be, it is pretty certain that *promise* and *threaten* do not conform to this pattern, for the relation described by their non-illocutionary uses does not belong to a subjective domain, but to factual knowledge.

5. CONCLUSION.

Previous approaches of non-illocutionary SAVs limited their scope to commissive verbs. A closer look at assertive verbs has proven to be extremely rewarding. It turns out that the traditional subjectification analysis is insufficient to handle all the non-illocutionary uses of these verbs, some of which cannot be said to encode an epistemic relation.

Faced with this inadequacy of the subjectification approach for examples like (1), I have tried to build up an analysis in terms of metaphorical projection. Since metaphorical projection must conform to the Invariance Principle which requires structural similarity between the source- and the target-domain, we had to pay attention to the cognitive experience of assertive speech acts so as to determine whether a plausible source-domain for (1) could be found at that level. It was argued that in fact there is not one, but two experiential apprehensions of each directive or assertive speech act. At the first (more basic) cognitive assertive speech acts are perceived direct signs of states of affairs. At the second level, some assertive speech acts are perceived as warrants for the truth of their content. The study of the non-illocutionary uses of assertive SAVs like *suggest* has shown that a single verb can contribute both an objective relation and a subjective (grounding) parameter to the referent frame: namely, a natural meaning relation and an epistemic domain. The same analysis turned out to be more suitable than previous approaches to handle the non-illocutionary *promise* and *threaten*. Contrary to what has been claimed in the literature, these verbs do not simply encode an epistemic relation: they describe a natural meaning relation and, simultaneously, set up the epistemic domain where this relation holds. Given that this structure corresponds exactly to the way commissive speech act are cognitively experienced, a metaphorical

mapping seems much more plausible than a subjectification process, all the more so since the subjectification analysis runs against problems that are solved by the metaphorical approach.

Before concluding this discussion, it is worth bringing to light some of the questions that have been left unanswered. First, the two-layered conception of speech act interpretation deserves further development; for instance, I have a strong inclination to think that the more basic level can, in fact, be reduced to Austin's (1975) notion of a *locutionary* act, and that the dissociation introduced can be empirically established by looking at the pragmatic behavior of autistic people. Second, it would be interesting to determine whether some of the patterns of meaning that have been uncovered above also apply to verbs unrelated to speech acts. Finally, and perhaps most importantly, all the claims I have made stand in need of a cross-linguistic and diachronic confirmation.

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HOW NATURAL IS INTERSUBJECTIFICATION? “INTERNAL” AND “EXTERNAL” FACTORS IN THE DEVELOPMENT OF THE JAPANESE GRAMMATICALIZED MARKER *-TE-SHIMAU**

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In this study, I attempt to characterize the emergence of intersubjectivity meaning of the Japanese marker -te-shimau. The marker was grammaticalized from the verb shimau ‘to put away, finish’ to indicate ‘intentional completion’ and ‘natural completion’, followed by ‘anti-intention’, ‘proposition negativity’, and the intersubjective sense ‘speech act negativity’. I will characterize the marker with empirical support, and shows that different shades of (inter)subjectivity can be layered in a single instance. This suggests the importance of pragmatics in semantic change, especially in intersubjectification. I will show that the development of intersubjective -te-shimau is “natural” in that it involves metonymic inference, a mechanism involved in a wide range of semantic change. This study also points out a “refractive” nature with respect to the (inter)subjectification continuum. That is, intersubjectification is “unnatural” and idiosyncratic in that it is associated with ‘positive’ propositional content and possibly the increased usage of the casual, contracted form -chau.

1. INTRODUCTION.

Linguistic embedding of interpersonal factors has been of great interest to many scholars, and recently, it has been more so in the context of diachronic development. In particular, the term *intersubjectivity* refers to speakers’ sensitivity toward speech situations and is typically indicated by overt social deixis and by explicit markers of speaker/writer attention to addressee/reader such as hedges, politeness markers and honorific titles, as described by Traugott and Dasher (2002:23). The authors states that intersubjectivity arises from *subjectivity* (= speaker’s attitude toward a propositional content) and that ‘subjectification and intersubjectification are both typical of “internal” change in the sense that they are natural changes’ (*ibid.* 32). It is then possible that intersubjectivity is regarded as an extension of subjectivity, or ‘more subjective’ than subjectivity, which gives rise to a question about intersubjectification, in what way is such a process natural?

In order to characterize the emergence of intersubjectivity with respect to the question above, I will provide a synchronic picture of such meaning, in particular, by exploring the idea that intersubjective meaning is largely pragmatic (Cf. Traugott forthcoming). In doing so, I have focused on the Japanese grammaticalized marker *-te-shimau/-de-shimau* (and its contracted form *-chau/-jau*, and *-shimau/-jimau*, all referred to as *-te-shimau* and glossed -SHIMAU, hereafter), which attaches to the *te* form of a verb stem and expresses various types of meanings. The functions of the marker have been described in a number of studies (Alfonso 1966, Soga 1983, Kindaichi 1976[1955], Takahashi 1976[1969], Yoshikawa 1976[1973], Ono 1992, Ono and

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Suzuki 1992, Fujii 1992, Yoshida 1994, Hasegawa 1996, Strauss 1994, 1996, 2003, Strauss and Sohn 1998, Suzuki 1999, etc.), but not in terms of the phenomenon in question. The marker was grammaticalized from the verb *shimau* ‘to put away, stow, finish’ around the mid/late seventeenth century and presently can indicate ‘intentional completion’, ‘natural completion’, ‘anti-intentional action’, ‘proposition negativity’ and ‘speech act negativity’ as shown below:¹

(1) Intentional Completion (IC) [predicative]²

ato wa fuyu-yasumi ni yatte-shimat-ta no ne
 rest TOP winter-break P do.TE-SHIMAU-PAST IT
 ‘I did the rest (of the homework) during the winter break (and finished it), you see.’ (*Rikkyo*)

(2) Natural Occurrence (NO) [predicative]

kugatsu ni kaette-kita toki wa kekkoo
 September in return-come when TOP to a great extent

shabe-reru tokoro made it-chau
 speak-POT point up to go-SHIMAU
 ‘When she comes back in September, she will have (naturally) become able to speak pretty well.’

(3) Anti-Intention Action (AIA) [quasi-subjective]

atsui hi ni wa biiru o nonde-shimau
 hot day TOP beer ACC drink.TE-SHIMAU
 ‘I end up drinking beer on a hot day (and I can’t help it).’

(4) Proposition Negativity (PN) [subjective]

otaru no jinkoo ga juuroku man o
 Otaru GEN population GEN a hundred-sixty thousand ACC

kitte-shimat-ta nee
 go below.TE-SHIMAU-PAST IT
 ‘The population of Otaru has gone below 160,000 (to my regret).’

¹ There are various ways of characterizing the polysemy of *-te-shimau* as shown in previous literature. In fact, the proposed number of meaning types ranges from one to more than five, depending on the criteria established by individual scholars.

² Abbreviations used in word-for-word translations are as follows:
 ACC=Accusative; COP=Copula; GEN=Genitive; HOR=Hortative; IT=Interactional element;
 NEG=Negative; PAST=Past tense; PERF=Perfect; P=Particle; POL=Polite; PROG=Progressive; QUOT=Quotative;
 TE =*te* form; TOP=Topic ; VOL=Volitional

(5) Speech Act Negativity (SAN) [intersubjective]

e kore ne, boku wa chotto, ano, karu-sugiru na tte
oh this IT I.male TOP a little um light-excess IT QUOT

ki shi-chau n-desu kedo
feeling do-SHIMAU COP.POL but

‘It feels to me “naturally” that it is too light (I am afraid).’ (*Komaba*)

As indicated in square brackets, the five proposed functions above can be sorted into three types with respect to three different domains, that is, different shades of (inter)subjectivity from PREDICATIVE to SUBJECTIVE to INTERSUBJECTIVE meaning. It is reasonable to consider them as constituting three distinct functional domains, since they have their own distinct “purposes”, which are to encode (or interpret) proposition-internal information, to express (or interpret) a speaker’s view toward the proposition, and to indicate (or interpret) an attitude toward the speech act itself, respectively.

It will be empirically shown that most subjective usage (as in (4)) and intersubjective usage (as in (5)) often involves less (inter)subjective meanings as well. In fact, (4) is judged as containing NO as well as PN, and (5) is judged as NO and PN (although not unanimously for PN) as well as SAN, which I will come back to in more detail in Section 3. In short, subjective tokens can be generalized as having the pattern, [(predicative +) subjective meaning(s)] and intersubjective tokens, [(predicative+) (subjective+) intersubjective meaning(s)].

This study provides a detailed semantic characterization of *-te-shimau*, in particular the way different shades of (inter)subjectivity can be layered in a single instance, using data from conversations and conversational parts of a novel with empirical support. The findings have diachronic implications. First, it reveals the naturalness of intersubjectification in that it involves a mechanism of metonymic inference, which is commonly found in semantic change including grammaticalization. Such processes involve the choice of a marker with more concrete meanings, i.e., predicative or subjective, to express more abstract meanings, i.e., (inter)subjectivity. For example, when a speaker hesitates to convey a certain message (but for some reason wants to or has to say it), he or she uses the strategy of indicating that something happened naturally or was done inadvertently. Such usage involves the function of expressing modesty toward the speech act itself (something like ‘I am sorry I have to say this to you’), i.e., intersubjectivity. This is, in a way, similar to the English use of *sort of* as in *I am sort of engaged*, in which the speaker hesitates to tell his date that he is engaged (to someone else).

Second, the present study also suggests a “refractive” nature on the (inter)subjectification continuum. That is, intersubjectification processes are unnatural in the sense that it involves idiosyncratic and “external” factors. Some recent usage of *-te-shimau*, involves little intersubjective sensitivity, acting like an empty marker. This phenomenon is seen frequently with the contracted form *-chau* and thus is likely to correlate with frequent usage of the marker in casual contexts perhaps reinforced by phonological reduction.

I will first provide a brief overview of the diachronic development of *-te-shimau* (Section 2), followed by an investigation of how different functions can be layered in individual uses of *-te-shimau* (Section 3). Finally, I will discuss the subjectification process of the marker as well as its mechanism and motivation. (section 4), followed by a conclusion (Section 5). To allow better

understanding of the remainder of the paper, the description of the five functions of *-te-shimau* (corresponding to (1) – (5)) are provided here:

(6) Predicative:

- a. [IC] ('Intentional Completion'): An action is carried out toward its completion or realization by the subject's intention.
- b. [NO] ('Natural Occurrence'): An event or a physical, psychological or situational state change occurs without involving the subject's intention toward or resistance against it.
- c. [AIA] ('Anti-Intentional Action'): An action is done in spite of resistance against it.

Subjective:

- d. [PN] ('Proposition Negativity'): Speakers' view, 'undesirable', toward the content of the clause or sentence.

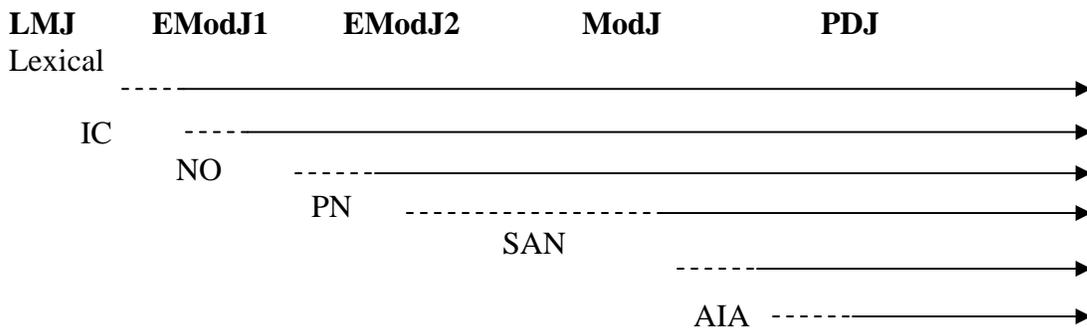
Intersubjective:

- e. [SAN] ('Speech Act Negativity'): Speakers' modesty toward the speech act itself.

2. DIACHRONIC OVERVIEW.

The marker *-te-shimau* originally developed from the lexical verb *shimau* 'to put away'; 'to finish'. The development is roughly summarized in Figure 1.³
 Figure 1 Overview of the development of *(-te-)shimau*:⁴

FIGURE 1.



One of the major relevant changes that contribute to (inter)subjectification is the increase of non-agentive usage, which is associated with several factors. First, development of non-agentivity can be understood in terms of a shift of attention from 'completion' to 'naturalness.' The justification is as follows. In old usage, only telic predicates were combined with *-te-shimau*,

³ See Abe (2007) for more detailed diachronic description of the marker with historical data.

⁴ Note the convention: LMJ = Late Middle Japanese (1392-1603), EModJ1 = Early Modern Japanese 1 (1603-1770), EModJ2 = Early Modern Japanese 2 (1770-1868), ModJ = Modern Japanese (1868-1926), and PDJ = Present Day Japanese (1926-present).

while in Present Day Japanese (1927 – present), *-te-shimau* can occur with non-telic verbs as well, as in (7).⁵

- (7) *tenchoo* *mo* *sasuga ni* *waratte-shimau* *tte*
 manager also even laugh.TE-SHIMAU QUOT
- kanji* *dat-ta*
 like COP-PAST
- ‘It was like, even our manager [burst out] laughing.’ (*Rikkyo*)

In (7), *-te-shimau* attaches to the activity verb ‘to laugh’, and indicates falling into the state of laughing. The extension of morpho-syntactic context appears to be associated with the development of non-agentivity and can be characterized in terms of the “completion” of crossing the initial point of an activity. In this particular case, the marking by *-te-shimau* provides an inceptive aspect to *warau* ‘laugh’ as ‘burst out laughing’, as opposed to a continuous and (deliberate) laugh. Although usage of *-te-shimau* with activity verbs is not very common, its emergence itself suggests the extension of the marker’s linguistic environment and reflects a corresponding semantic extension.⁶ The following diagrams show how the prototypical temporal notion of ‘completion’ can spread to a causal notion of the event’s ‘non-agentivity’.

⁵ The Aktionsart types of *te* predicates are based on Toratani (2002)’s diagnostic tests.

⁶ In addition to activity verbs, the selectional restriction of *-te-shimau* has also loosened to follow stative verbs and sometimes the progressive or perfect auxiliary, *-te-iru*. For the latter (*-te-iru*), the traditional order was *VPte-shimatte-iru*, but there have been some attested cases of *VPte-ite-shimau*. In the following examples, *-te-shimau* follows *mitsuzuke-teiru* ‘watch-continue-PROG’ and *kizuite-iru* ‘notice-PERF’:

- a. *hiruma kara* *yoru* *neru* *mae* *made* *gamen o*
 afternoon from night sleep before until screen ACC
- mi-tsuzukete-ite-shimau* *to iu* *jootai...*
 watch-continue.TE-PROG-SHIMAU QUOT situation
- ‘...situation in which (I) [unfavorably] am continuously watching the TV screen from the
 afternoon until bed time.’
- b. *jibun* *ga* *ichiban* *taisetsu ni* *omotte-iru*
 self NOM most important ADV think-PROG
- koto* *de,* *jibun* *wa* *ichiryuu ni* *nare-nai*
 matter with self TOP master P become-NEG QUOT
- kizuite-i-chau* *tte,* *sugoku* *zankokuna* *koto* *da yo* *ne*
 realize-PERF-SHIMAU QUOT very harsh thing IT
- ‘Isn’t it awful to realize [unfortunately] that you can never master what you care about the most?’

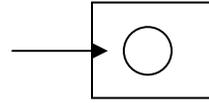
The noun phrase in (a) was found in a blog in which the writer talks about his own habits. The marker *-te-shimau* follows *mi-tsuzukete-iru* ‘be continuously watching’. Since it does not make sense for *-te-shimau* to mark the completion of a continuous action, it has to indicate ‘the falling into such a state’, ‘non-agentivity’ and most likely the speaker’s subjective judgment that the situation is unfavorable. In (b), *-te-shimau* follows *kizuite-iru* ‘to be realizing’ and indicates the speaker’s subjective assessment of the situation. The fact that *-te-shimau* became syntactically more peripheral, i.e., further outside of the verb root, can be regarded as evidence that its meaning increasingly involves speakers’ perspective toward the propositional content.

FIGURE 2. WEAKENING OF ‘COMPLETION’.

a. completion



b. “completion”



In (a), the original notion of completion involves undergoing the entire process, whereas in (b) the notion of completion is extended to the passing, or “completion”, of the inception point. Accordingly, it can be said that *-te-shimau* has undergone a semasiological development from a temporality meaning to a causality meaning.⁷

My previous historical data (2007) suggests that the increase in proportion of non-agentive *-te-shimau* correlates with an increase in the proportion of third person sentences. Another noticeable change is the increase of non-agentive usage of the first person. The occurrences of *-te-shimau* as a non-agency marker in a statement about the speaker him/herself were very few in the Early Modern Japanese (1603 - 1868) data. However, in Modern Japanese (1868 - 1926) this kind of usage accounts for over half of the first person tokens and remains frequent in Present Day Japanese. In this type of usage, *-te-shimau* is often combined with the *te* predicate of verbs of controllable actions, such as *warau* ‘to laugh’, or those involving a stronger agency, such as *denwa o kakeru* ‘to phone’, functioning as an agent canceller, which is often associated with intersubjectivity as well as subjectivity.

The major mechanism of the emergence of intersubjective meaning of *-te-shimau* seems to be metonymic inference (see also 4.2). We shall now see how intersubjective meaning relates to other types of meaning i.e., subjective and predicative meanings, by investigating synchronic usage. Considering that pragmatics plays a crucial role in semantic change (Traugott and König 1991, Traugott 1988, 1998), it is reasonable to suspect such an association, which gives rise to intersubjectification in a diachronic sense, in terms of the coexistence of multiple functions in a single token, rather than to try to categorize each token into only one of the three, predicative, subjective or intersubjective, types.

3. LAYERING OF FUNCTIONS: DATA ANALYSIS⁸

I have analyzed 40 sets of short transcribed conversations and a novel from Present Day Japanese. The assessment of the meaning of *-te-shimau* is based on a judgment test by five native speakers including myself (who I will refer to as ‘informants’).⁹ The judgment tasks consisted of three steps: to find out 1) which of the three predicative meanings (IC, NO or AIA), if any, is detected; 2) whether subjective meaning (PN) is detected; and 3) whether intersubjective

⁷ The relationship between transitivity and aspectual properties of *-te-shimau* has been discussed from a cross-linguistic perspective by Strauss (1994). She shows a striking similarity between *-te-shimau* and Romance reflexives and the middle voice, which seems to conform to the idea in the present discussion.

⁸ The content of this section is a substantially supplemented version of the conference presentation. Originally, I observed individual tokens qualitatively.

⁹ The four other native speakers were linguists in the Department of Linguistics, University at Buffalo.)

meaning (SAN) is detected. (See the instruction sheet in Appendix.) Table 1 shows all possible layering patterns and their distributions.

TABLE 1. PATTERNS OF FUNCTIONS (184 TOKENS TOTAL).

		(Inter)subjective		
		None	PN (subjective)	SAN (intersubjective)
Predicative	Ambiguous ('?')	0	[?-PN] 11 (6%)	[?-SAN] 1 (0.5%)
	IC	[IC] 15 (8.2%)	[IC-PN] 28 (15.2%)	[IC-SAN] 9 (4.9%) [IC-PN-SAN] 5 (2.7%)
	NO	[NO] 12 (6.5%)	[NO-PN] 94 (51.1%)	[NO-SAN] 3 (1.6%) [NO-PN-SAN] 5 (2.7%)
	AIA	[AIA] 0 (0%)	[AIA-PN] 1 (0.5%)	[AIA-SAN] 0 (0%) [AIA-PN-SAN] 0 (0%)
	Total	27 (14.7%)	134 (72.8%)	23 (12.5%)

In this paper, I will only discuss the patterns that contain intersubjectivity, i.e., Speech Act Negativity (SAN), in the results. (See Abe 2007 for the full results and discussion.) The patterns comprise 12.4% (23 tokens) of the entire data. All these tokens are judged as having either an IC or NO sense, and some of them, in addition, have a PN sense. All the intersubjective examples have a certain degree of split in the responses.¹⁰ As for the patterns other than intersubjective ones, I will only briefly mention the relevant results here in order to allow a better understanding of intersubjective usage. First, two of the predicative functions, IC and NO can be considered as major functions of *-te-shimau*, while AIA seems to be heavily conditioned by subjectivity or intersubjectivity. Second, the subjective function seems to be the most dominant function of *-te-shimau* in Present Day Japanese, which is reflected by the fact that over seventy percent of the total tokens were judged as containing PN. The dominance of subjectivity is consistent with claims made in previous studies (Suzuki 1999, etc.). It has also shown that each layering pattern has more prototypical examples than the others.

Coming back to intersubjectivity, the following four sections provide semantic characterization of each attested pattern.

3.1 IC-PN-SAN: expressing ‘guilt of actions’. There are five tokens of this type. All five examples are about speakers’ own actions, two of which are shown here:

- (8) *ano, kekkyoku shin, ano, moo saigo wa moo chuu,*
Um, after all die um now last TOP already[shot]

¹⁰ Such mixed answers are also treated as legitimate data. The categorization of the patterns required a certain degree of approximation. In particular, tokens having three or more identical responses are classified into the respective category. In other words, a pattern type (e.g., [IC]) can range from unanimous cases (all five people chose IC) to cases in which there are three out of five identical choices (three people chose IC). I will distinguish ‘non-unanimous’ cases from the ‘unanimous’ cases when presenting data by using a prime ‘’ (e.g., IC’). Cases in which more than one choice are equally prominent are considered ‘ambiguous’ cases and are marked with a question mark ‘?’, as seen in Table 1.

chuusha de koroshi-chat-ta n desu kedo
 shot with kill-SHIMAU-PAST COP.POL but
 ‘Um, after all, dead.., I mean, at last, I [“intentionally/had to”] put her to sleep [I’m afraid].’ (about Sp’s cat who had been in a car accident) (*Komaba*, IC’-PN-SAN’)

- (9) *uun, tsukuru no tte muzukashii yone. atashi kekkyoku*
 mm, making TOP difficult IT I after all

makase-chat-tashi
 leave-SHIMAU-PAST
 ‘Mmm, it is hard to make one. After all, I [“intentionally/had to”] left it to someone else [I’m afraid].’ (about creating a play) (*Komaba*, IC’-PN’-SAN’)

In (8), the speaker is expressing the guilt of killing her own cat, which was assessed as undesirable and might also sound too shocking for the addressee. In (9), the speaker is expressing the guilt of leaving her job to someone else. In both cases, the usage of *-te-shimau* as a marker of intentional action and guilt toward it softens the impact of the propositional content.

It may seem contradictory that the marker of intentional completion as well as non-agentivity is used for marking negativity or modesty. However, note that *-te-shimau* has force dynamic meaning (Talmy 1988, 2000a) as an important component of its semantics. Thus, the indication of “intention” here is considered in terms of ‘self-coercion’, ‘daring’ or something like ‘I had to do it.’ This applies to the next pattern.

3.2 IC-SAN: ‘humbly daring’. There are nine tokens of this type. Each contains a slight disagreement in the judgment test in the IC part or SAN part, or both. The speaker’s very act of marking his intention, and often daringness/courage (i.e., IC), implies his modesty about delivering the proposition (i.e., SAN). Unlike in the previous type, the speaker’s negative assessment toward the propositional content was not detected in the judgment, i.e. it was judged that the speaker does not actually feel negatively, perhaps because the speech situation is informal enough that the utterance does not give a serious impression (due to lack of politeness markers, etc.). All nine examples are about the speakers’ own actions. Here are some examples:

- (10) *jaa, kore mo onegai shi-cha-oo*
 then, this also ask favor do-SHIMAU-VOL
 ‘Then, I will [“intentionally”] ask you to do this as well [I hesitate to ask you].’
 (asking addressee to cut more vegetables having been told that he was a good cook) (*Kanashii*, IC’-SAN)

The speaker here expresses her modesty of asking a favor by indicating her awareness of “intention”, more precisely “daringness”, of putting the addressee to work.

3.3 NO-PN-SAN: expressing ‘uncontrollability and undesirability’. There are five tokens of this type, but each contains a slight disagreement in the judgment test. In this pattern, the speaker

delivers a message that he/she thinks is not favorable for the addressee by using *-te-shimau* as a marker of the natural/automaticness of the event/situation:

- (11) *e kore ne, boku wa chotto, ano, karu-sugiru na tte*
 oh this IT I.male TOP a little um light-excess IT QUOT
- ki shi-chau n-desu kedo*
 feeling do-SHIMAU COP.POL but
 ‘It feels to me [“naturally”] that it is too light [I am afraid].’ (*Komaba*, NO-PN'-SAN)

The speaker successfully expresses his opinion, which he thinks may not be agreeable to the addressee, by indicating that his thought “naturally occurred to him”.

3.4 NO-SAN: ‘humbly passive’. There are three tokens of this type. Each contains a slight disagreement in the responses. In this pattern, the speaker modestly delivers a message that is favorable for himself by indicating or emphasizing the lack of agency in the event:

- (12) *ano hi kara nantonaku suki ni nat-chat-ta*
 that day from somehow like become-SHIMAU-PAST
- n desu ne*
 COP.POL IT
 ‘From that day, I came to have a crush on her [“automatically”] for some reason [I am afraid].’ (*Kanashii*, NO'-PN-SAN')

The speaker is talking about his own happy romantic anecdote with modesty, by indicating that having a crush on his present girlfriend occurred naturally.

4. DISCUSSION.

The synchronic observation as provided above can reveal the complex semantic picture of *-te-shimau* with respect to what kind of senses can coexist, inferential relationships of the senses, and thus the mechanism for diachronic change as to the origin(s) of intersubjectivity. There seem to be recognizable intersubjective examples, but based on the fact that all the attested examples are detected with other type(s) of meaning (i.e., one of the predicative functions and/or PN), intersubjectivity of *-te-shimau* can be considered as not “pure”, or not yet semanticized.¹¹ Aside from this status, I will attempt to characterize the nature of the intersubjectification process of *-te-shimau* as to in what way such a process is natural or unnatural.

4.1 Mechanism and motivation of semantic change. There are at least two levels of factors involved in semantic change, namely MECHANISM and MOTIVATION. By mechanisms, I mean

¹¹ When there is no possible interpretation other than the intersubjective sense, the marker can be said to be intersubjectified. (Cf. Traugott forthcoming)

the connection between the source and target senses of the semantic change, such as analogy, reanalysis, inference and shift of viewpoint. Mechanisms can be defined as “the kinds of cognitive and communicative processes speakers and hearers bring to the task of learning and using a language” (Traugott and Dasher 2002:1), and should be regarded at a more explanatory level than factors that are simply about relationships between the source and the target, such as broadening, amelioration etc.

At another level, motivations, such as filling a gap, politeness, avoiding taboos (euphemism), avoiding responsibility, sarcasm, humor, creativity, avoiding directness (understatement), expression of emotion or attitude and economy may also have an explanatory role for the relationship between the source and target meanings, at least indirectly, in terms of what makes speakers use a particular linguistic item for a new (target) meaning rather than the original (source) meaning. Motivations are usually conditioned by interpersonal (intersubjective) factors and thus involve speakers’ intention for particular linguistic strategies that may or may not lead to diachronic change. It should be noted, however, that as Hopper and Traugott mention, “speakers for the most part do not intend to change the language”, and “on the contrary, many would like to prevent change if possible” (2003:74). Having stated this, the intersubjectification of *-te-shimau* involves ‘(metonymic) inference’ as the mechanism and ‘avoiding indirectness’ as the motivation, which I will elaborate on in the next two sections.

4.2 Natural aspect of the intersubjectification process of *-te-shimau*. As mentioned above Intersubjectification involves metonymic inferencing as a mechanism. Table 2 illustrates how intersubjective meaning operates.

TABLE 2. METONYMIC INFERENCE (SPEAKER-BASED).

Intended meaning	Form + Semanticized meaning	
a. non-subjective	<i>-te-shimau</i>	Predicative meaning: ‘completion’/‘irreversibility’, etc.
	↓ subjectification	
b. subjective	<i>-te-shimau</i>	Subjectivity: ‘undesirability’
	↓ intersubjectification	
c. intersubjective	<i>-te-shimau</i>	Intersubjectivity: ‘modesty’

The left arrows: directions of recruiting of forms (two bold lines for intersubjective use.)

Arrows on the right column: direction of semasiological change of *-te-shimau*

The speaker can display modesty by indicating his “negative” attitude toward the proposition being expressed (upper bold arrow) and/or that the event being described is beyond his intention or control (lower bold arrow). The connection between the neighboring concept, i.e. inferential reasoning, is the mechanism. The motivation associated with this connection, which is deliberate, is ‘avoiding directness’ and occurs in an interpersonal context.¹²

¹² It is also possible to think of the mechanism of metonymic inference from hearers perspective in which, for example, a hearer can interpret sentences with *-te-shimau*, which canonically indicates a completed action or natural occurrence, as also having subjective meaning which may result in semasiological (inter) subjectification. However, the role of inferences and the dominance of speakers’ role have been claimed by previous studies, in particular under

Note that avoiding directness can mean two things. It can mean either the choice of indicating hesitation (= speech act negativity) over conveying a message without any marking of hesitation ('bald on record' by Brown and Levinson 1987), or the choice to recruit a marker of a near-neighbor concept over expressing hesitation overtly (e.g., *I hate to say this, but...*). The 'directness' in either case, i.e., not indicating hesitation at all or indicating it with overt marking, would be considered as problematic by language users in that the former would result in rudeness and the latter may sound patronizing or unnatural. The usage of the marker *-te-shimau* avoids directness in these two senses and represents one way of achieving a communicative goal, a way of resolving the conflict between a speaker's need or desire to convey the content and his/her sensitivity toward the addressee. This kind of strategy is subject to the cultural norm of a particular speech community and speech situation.

4.3 Unnatural aspect of intersubjectification. The intersubjectification process of *-te-shimau* can be 'refractive' with respect to the (inter)subjectification path, which is considered to be more or less natural and regular. As for the present case study, one reason for this is that the "negative" attitude toward expressed content involved in intersubjective usage is not necessarily negative to the speaker. It can also be positive as long as it concerns the addressee's perspective. Consequently, the marker *-te-shimau* absorbs such "hidden" positive meanings in the message as part of its implication. Consider the sentence in (12) presented earlier. It is evaluated as having a NO-SAN' pattern in the judgment test without a PN sense. Here, the speaker is telling the addressees an anecdote of how he came to have a crush on his present girlfriend. Instead of directly saying *suki ni nat-ta* 'got a crush (on her)', which might give the impression of arrogance, the speaker chooses to use the marker *-te-shimau* to soften the speech act.

The attitude toward the content, i.e., what the speaker thinks or what the addressees think the speaker thinks, is positive, which is why *-te-shimau* is often considered to indicate positive meanings such as 'pride'. (See the example of "guiltily positive" by Ono and Suzuki (1992) in Chapter 3, 3.1.12.) Thus, in diachronic terms, semasiological development of positive meaning of *-te-shimau*, such as 'pride', are best characterized as a 'side effect' of intersubjectivity. The notion is attributed to the propositional content itself rather than the sense the speaker intends to indicate, but at the same time, is conditioned by an intersubjective setting. Thus, intersubjectification is 'refractive' in that it tends to produce 'spin-off' meanings that arise from external factors, which are interpersonal and often culture-dependent.

the *Invited Inferencing Theory of Semantic Change* (IITSC) (Traugott 1997, 2003, *inter alia*). Under this theory, the key factors are "associative, metonymic, indexical meanings that arise in the process of speech and writing". The theory is also "a speaker-based approach, with an emphasis on strategic negotiation in the flow of speech/writing" (Traugott 1998:95). The author states the idea behind this theory as follows:

...speaker/writer tried out a new use exploiting available implicatures. If the innovative use succeeds, the hearer/reader will interpret the intention correctly, and possibly experiment in similar ways in producing speech/writing. But rarely does the act of interpretation itself lead directly to innovation.
(*ibid.*:95)

I will share the same view about the speakers and hearers role with respect to the diachronic change, but it is beyond the scope of this paper.

The ‘refraction’ effect above is associated with another ‘unnatural’ aspect of intersubjectification process, which is that the development (and increase) of the contracted form *-chau*, a type of signal simplification, also interacts with the meaning change of the form. In addition to the expansion of the propositional content used with *-te-shimau* (from negative to positive), the ease of pronunciation and the associated informality of the social context allows for increased use of ‘routinization’ (Tarugott and Brinton 2005). In recent Japanese, there is a contracted form *-chau*, which is considered empty (or “light” or “no emphasis” by Strauss and Sohn 1998). Consider the following examples:

- (13) a. *hisashiburi ni piano hii-**chat**-ta’ to itte*
 After a long time piano play-SHIMAU-PAST QUOT say
- futa o toji watashi ni hohoemi-kake-ta*
 lid ACC close I P smile-direct-PAST
 “‘I [humbly/daringly] played the piano’, she said closing the piano and smiled at me” (*Kanashii*).
- b. *andaarain nanka hii-**cha**-oo kana*
 underline hedge draw-SHIMAU-HORT I wonder
 ‘I think I will kinda [humbly/daringly] draw underlines’ (*Rikkyo*).

In (13a), the marker *-te-shimau*, with the activity predicate *piano o hiku* ‘play the piano’, does not refer to the completion of an action (in a typical completion sense of *-te-shimau*), lack of agency, or negativity. In this situation, the speaker indicates her bashfulness over the slightly daring action and pride. In this context, however, there is little interpersonal sensitivity especially since the proposition is not news-worthy and the addressee already knows that she was playing the piano. (13b), likewise, involves little interpersonal sensitivity since the speaker is talking to himself (in other people’s presence). The marker *-chau* has become overused to the extent that it loses meaningfulness in certain contexts. This emptiness is potentially regarded as a symptom of intersubjectification (and perhaps also as something that occurs beyond the grammaticalization process). The marker is clearly different from speech act negativity expressed by English *sort of* or *-te-shimau* and also seems different from what Fitzmaurice (2004) calls ‘interactive’ markers, markers that keep a conversation going, which can develop after intersubjectification.

5. CONCLUSIONS.

In this paper, I have provided the detailed synchronic characterization of the Japanese grammaticalized marker *-te-shimau*. The investigation of this culturally-significant morpheme revealed not only the way different degrees of (inter)subjectivity can be packed into a single usage, but also elucidated the nature of an intersubjectification process, as to in what way it is a “natural” or “unnatural” process. I have shown that the intersubjectification process of *-te-shimau* involves metonymic inference as many other semantic changes across languages, showing regular tendency. I have also shown the “unnatural” aspect of the phenomenon in question.

One of the remaining questions about the intersubjectivity of this particular case study is whether *-te-shimau* will ever develop into a “pure(r)” intersubjective marker or only spin off into something idiosyncratic. This also pertains to the more general question of what the further stages of grammaticalization, (inter)subjectification and also life after intersubjectification are like.

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Appendix: Instruction Sheet

Instructions

Overview:

I am looking at the 184 occurrences of てしまう in various contexts in my Present Day Japanese data (in 3 sets of data called 'kanashii' 'rikkyo' and 'komaba'). For all the examples, please do tasks (1) – (3).

Before beginning, please note the following

- **The subject can be overt or understood (i.e., syntactically covert).**
- **Please be aware of the distinction between 'subject' (主語) and 'speaker' (話者) in your instruction.**
- **On your data sheet, I have already put mine judgment next to your column.**

Task (1): Please read the following descriptions of the three types of てしまう (including ちゃう) below ([1] – [3]) and enter one of the following in the first column of the data sheet:

- '1', '2', or '3' (for the types above)
- 'n' for none of the three
- '1/2', '2/3', '1/n', etc. if you cannot determine between specific types

[1] an action is carried out toward its completion or realization by the **subject's** intention. ある動作が主語 (動作主体)の意志によって、その完了・達成に向けて行われる。e.g., 宿題をしてしまう。(Compatible with 「わざと」.)

[2] an event or a physical/psychological/situational state change (expressed in the te predicate) occurs without involving the subject's intention toward or resistance against it. ある出来事や物理的・心理的・状況的な状態変化が主語の意志または抵抗を伴わずに起こることを表す。e.g., 電気が消えてしまう。不安になってしまう。(Compatible with 「自然に」.)

[3] an action is done in spite of **his/her** resistance against the action. ある動作が主語 (動作主体)の抵抗に反して起こることを表す。e.g., ついたくさんビールを飲んでしまう。(Compatible with 「ついつい」.)

Task (2): Please decide if てしまう indicates the **speaker's** view, 'undesirable', toward the **content** of the clause or sentence (てしまうを含む節・文の内容に対し好ましくないという話者の見方) and enter one of the following in the second column:

e.g., 妻に逃げられてしまった。
猫が死んでしまった。

Please enter:

- 'y', if it is indicated
- 'n', if it is not indicated
- '?' if you cannot determine

Task (3): Please decide if てしまう(ちゃう) indicates the **speaker's modesty toward the speech act itself or the sensitivity toward the addressee** (話者の発話行為そのものに対する控えめさ、または聞き手に対する配慮). (hedge-like function in some sense)

- e.g.,
- a. (女の子達と)UNOをやってしまいましたよ。(控えめな自慢)
 - b. あたしさ、高校生にさ、ナンパされちゃった。(控えめな自慢)
 - c. 僕だったらいただいちゃうけど。(自分の大胆さを表現することへの控えめさ)
 - d. 送っていただくことになってしまって、すみません。(相手に不都合なことへの配慮の気持ちを表現)

Please enter:

- 'y', if modesty/sensitivity is indicated
- 'n', if it is not indicated
- '?' if you cannot determine

Please fill in the attached form and send it back to me. Thank you!

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Japanese speakers can tell the gender of their given names when they first hear them. This indicates there are phonological gender differences in Japanese given names. By analyzing Japanese most popular given names in the last 100 years (1906 – 2005), this study explores the roles of syllables and morae in determining the gender. The present study consists of two parts. The first part focuses on phonological gender differences in Japanese given names and discusses the roles of syllables. Japanese given names have five types of phonological gender differences: initial syllables, final syllables, heavy syllables, palatalized consonants, and length. Among them, final syllables, and heavy syllables refer to syllabic structures, which indicate syllables play significant roles in determining the gender. The second part focuses on the vowels in Japanese given names and explores the roles of morae. This part of study reveals male and female names share many common features with regard to vowels. This suggests that moraic parts of syllables do not play major roles in determining the gender.

1. INTRODUCTION.

The present study focuses on the roles of syllables and morae in determining the gender of Japanese given names. Japanese speakers can tell the gender of their given names even when they hear them for the first time. This indicates that there are phonological gender differences in Japanese given names and that the Japanese speakers judge the gender by the phonological clues. This study discusses phonological gender differences in Japanese given names and explores the roles of syllables and morae in determining the gender of Japanese given names.

2. ANALYSIS.

Phonological Gender Differences in Japanese Given Names. This section focuses on phonological gender differences observed in Japanese given names. I collected the data from Daiichi Seimei (1987) and Meiji Yasuda Seimei (website). From Daiichi Seimei, I collected the most popular Japanese given names in each year from 1906 to 1985. Daiichi Seimei provides lists of five most popular Japanese male and female names in each year from 1906 to 1985. I divided the 1906 – 1985 time frame into four stages of 20 years: 1906 – 1925, 1926 – 1945, 1946 – 1965, and 1966 – 1985. In each stage, I collected 100 male names and 100 female names. But, only distinct names were included in the dataset for this part of the study, because the same names appear on the lists repeatedly.

Meiji Yasuda Seimei (website) provides a list of ten most popular Japanese male and female names in each year from 1986 to 2000. Only distinct names were included in the dataset, as in

* This work has been supported by Pache Research Fund I-A-2 (Nanzan University).

the data from Daiichi Seimei. From 2001 to 2005, Meiji Yasuda Seimei provides a list of the most popular Japanese male and female names annually. I included the lists in the dataset. As a result, 279 male names and 305 female names in total are included in the dataset for this part of the study, as shown in Table 1. By analyzing the data, I found that Japanese given names have five types of phonological gender differences: initial syllables, final syllables, heavy syllables, palatalized consonants, and length.

TABLE 1. DATA

	'06-'25	'26-'45	'46-'65	'66-'85	'86-'00	2001	2002	2003	2004	2005	Total
Male	12	15	11	14	29	31	32	30	50	55	279
Female	15	16	14	19	42	30	31	31	57	50	305

(1906-1985: Daiichi Seimei (1987), 1986-2005: Meiji Yasuda Seimei (website))

First, initial syllables play important roles in determining gender. Table 2 shows the initial syllables of the most popular Japanese given names. A number of gender differences are observed with respect to the initial syllables. First, the names starting with vowels are feminine. Among 51 female names in the data starting with vowels, 50 names start with *a* (e.g., Akiko, Ayumi, and Airi). The initial *a* is the most common feminine feature and 16.4% of female names, i.e., 50 names out of 305, have it, whereas in male names this vowel is uncommon in initial position. Among the six male names starting with a vowel, three names start with *a* (e.g., Akira) and the other three names with *i* (e.g., Ibuki).

Second, the velar stop /k/ is more common in male names. The velar stop is the most common initial consonant in male names and 19.0 % of male names have the initial /k/ (e.g., Kaito, Kiyosi, and Kotoroo), whereas 8.5% of female names have it (e.g., Kana, Kiyoko, and Kokoro). Among the syllables starting with /k/, *ke* especially indicates masculinity. There are only two female names starting with *ke*, while it is more common in male names, i.e., 12 names (e.g., Keito and Kenta).

Third, initial /s/ is more common in male names than in female names, but initial *sa* in female names is more common in female names (e.g., Saki and Saori). In male names, *soo* and *shoo* are most commonly observed (e.g., Soota and Shoogo). Fourth, the alveolar stop /t/ is masculine (e.g., Takuma and Tomoki). 15.8 % of male names have the initial /t/, whereas 3.6% of female names have it. Fifth, the fricative /h/ is found in both male and female names, but there are no male names starting with *hu* or *ho*. The name-initial *hu* and *ho* are feminine features (e.g., Humi and Honoka).

Sixth, nasal sounds connote femininity - particularly /n/ (e.g., Nana and Noa). There are only three male names in the data that starts with /n/. Seventh, the alveolar liquid /r/ is observed in both male and female names. But, in the male names, most of them start with *ryo* (e.g., Ryo and Ryooma), while it is not the case in female names. Eighth, /j/ and /w/ are found only in female names (e.g., Junko and Wakana). Ninth, the voiced alveolar stop /d/ connotes masculinity (e.g., Daiti and Daisuke). And, the palatal glide /y/ is the only initial sound that does not indicate the gender.

TABLE 2. INITIAL SYLLABLES.

		V-	k-	s-	t-	n-	h-	m-	y-	r-	w-	j-	d-
Male	'06-'25	0	2	3	3	0	2	1	1	0	0	0	0
	'26-'45	2	2	2	4	0	2	2	1	0	0	0	0
	'46-'65	1	4	1	3	0	2	0	0	0	0	0	0
	'66-'85	0	3	1	3	0	2	1	3	0	0	0	1
	'86-'00	0	6	4	6	2	0	0	3	5	0	0	3
	2001	0	7	4	2	1	4	2	5	5	0	0	1
	2002	0	5	6	3	0	5	0	6	6	0	0	1
	2003	0	4	3	4	0	5	0	7	6	0	0	1
	2004	2	9	6	8	0	7	1	7	9	0	0	1
	2005	1	11	8	8	0	8	2	9	7	0	0	1
	Total	6	53	38	44	3	37	9	42	38	0	0	9
Female	'06-'25	0	4	0	2	0	5	2	2	0	0	0	0
	'26-'45	1	3	2	2	1	2	3	2	0	0	0	0
	'46-'65	1	3	0	1	1	2	2	3	0	0	1	0
	'66-'85	3	2	0	1	2	1	4	4	1	0	1	0
	'86-'00	9	3	4	3	6	2	11	2	2	0	0	0
	2001	7	0	2	0	3	4	7	3	4	0	0	0
	2002	6	2	2	0	2	5	8	2	4	0	0	0
	2003	7	0	2	1	2	4	8	4	3	0	0	0
	2004	9	5	4	1	5	8	13	4	7	1	0	0
	2005	8	4	2	0	4	6	14	6	5	1	0	0
	Total	51	26	18	11	26	39	72	32	26	2	2	0

Next, the final syllables also play significant roles in determining gender. Table 3 shows the final syllables observed in the data. The final syllables have been changing over time. First, the masculine features *si* and *ji* are observed only in male names from 1906 to 1985 (e.g., Satoshi and Kooji). Second, *ke*, *ta*, and *to* in male names are observed only after 1965 (e.g., Yuusuke, Hinata, and Shuuto). Third, the name-final *ko* is the most common female feature in the data (e.g., Akiko and Miyoko). But it has become less common since 1986. Fourth, the female feature *ka* is observed only after 1965 (e.g., Ayaka and Rinka) and the female feature *na* is popular since 1986 (e.g., Hina and Mana). Fifth, the name-final *mi* is common in female names in the data (e.g., Hiromi and Tomomi), but it has been observed in both male and female names since 1986 (e.g., Takumi). Sixth, the name-final syllable *o* is observed only in male names from 1906 to 1965 (e.g., Isao and Tosio). But, it is more common in female names since 2001 (e.g., Nao and Rio). Seventh, the name-final *ki* is observed in both male names (1946–) (e.g., Kazuki and Daiki) and female names (1966–) (e.g., Mizuki and Yudoku), but it is more common in male names than in female names. Finally, the name final *ma* is found only in male names since 2002 (e.g., Takuma and Yuuma).

TABLE 3. FINAL SYLLABLES.

		-si	-ji	-ke	-ta	-to	-ko	-mi	-ka	-na	-o	-ki	-ma
Male	'06-'25	2	1	0	0	0	0	0	0	0	6	0	0
	'26-'45	4	1	0	0	0	0	0	0	0	7	0	0
	'46-'65	2	2	0	0	0	0	0	0	0	3	1	0
	'66-'85	4	2	3	1	1	0	0	0	0	0	2	0
	'86-'00	0	0	1	3	3	0	1	0	0	0	2	0
	2001	0	0	3	6	5	0	1	0	0	0	8	0
	2002	0	0	2	5	5	0	1	0	0	0	6	5
	2003	0	0	2	5	6	0	1	0	0	0	5	2
	2004	0	0	3	10	7	0	1	0	0	1	8	2
	2005	0	0	3	6	11	0	1	0	0	1	8	4
IFemale	'06-'25	1	0	0	0	0	7	2	0	1	0	0	0
	'26-'45	0	0	0	0	0	16	0	0	0	0	0	0
	'46-'65	0	0	0	0	0	11	3	0	0	0	0	0
	'66-'85	0	0	0	0	0	7	6	2	0	0	1	0
	'86-'00	0	0	0	0	0	2	9	5	3	0	4	0
	2001	0	0	0	0	0	1	3	6	6	1	3	0
	2002	0	0	0	0	0	1	3	7	7	1	1	0
	2003	0	0	0	0	0	1	3	5	6	2	2	0
	2004	0	0	0	1	0	1	4	7	11	3	3	0
	2005	0	0	0	1	0	1	3	5	12	3	3	0

Next, Heavy syllables and palatalized consonants also indicate gender. Heavy syllables are more common in male names (e.g., Koosei and Yuuya) than in female names. And, they have become more popular since 1986. More than 40% of male names have a heavy syllable. In Japanese given names, heavy syllables are observed in the first syllable. The only exceptions to this generalization are the male names *Shoozoo*, *Kentaroo*, and *Kensin* where heavy syllables are found not only in its first syllable but also in its final syllable.

TABLE 4. HEAVY SYLLABLES.

		uu	oo	n	Total
Male	'06-'25	0	3	0	3 (25.0%)
	'26-'45	0	2	0	2 (13.3%)
	'46-'65	0	1	1	2 (18.2%)
	'66-'85	3	0	1	4 (28.6%)
	'86-'00	4	6	3	13 (44.8%)
	2001	6	9	3	18 (58.1%)
	2002	7	8	3	18 (56.3%)
	2003	8	8	1	17 (56.7%)
	2004	9	9	4	22 (44.0%)
	2005	9	11	7	27 (49.1%)
Female	'06-'25	0	0	0	0 (0.0%)
	'26-'45	0	1	0	1 (6.2%)
	'46-'65	1	1	1	3 (21.4%)
	'66-'85	1	1	1	3 (15.8%)
	'86-'00	1	0	0	1 (2.4%)
	2001	3	0	0	3 (10.0%)
	2002	1	0	0	1 (3.2%)
	2003	2	0	1	3 (9.7%)
	2004	3	0	3	6 (10.5%)
	2005	4	0	2	6 (12.0%)

Palatalized consonants in Japanese given names are observed only in heavy syllables. Palatalized consonants are observed only in male names from 1906 to 1945 and since 1986 (e.g., Shooji and Ryuu), while they are found only in female names from 1946 to 1985 (e.g., Kyooko and Junko). I assume that the palatalized consonant is a masculine feature, because it is more common in male names and observed only in a heavy syllable, which is also a masculine feature. Kindaichi (1988) claims that palatalized consonants sound inelegant. But, the fact that palatalized consonants are commonly used in male names indicates that palatalized consonants sound not inelegant but masculine, because no one likes to use inelegant sounds in his child's name.

TABLE 5. PALATALIZED CONSONANTS.

		kyo	shu	sho	ju	ryu	ryo	Total
Male	'06-'25	0	0	3	0	0	0	3 (25.0 %)
	'26-'45	0	0	2	0	0	0	2 (13.3 %)
	'46-'65	0	0	0	0	0	0	0 (0.0 %)
	'66-'85	0	0	0	0	0	0	0 (0.0 %)
	'86-'00	0	1	3	0	1	2	7 (24.1%)
	2001	0	1	2	0	1	2	6 (19.4 %)
	2002	0	2	2	0	1	3	8 (25.0 %)
	2003	0	0	2	0	1	3	6 (20.0%)
	2004	0	0	2	0	2	2	2 (12.0%)
	2005	0	2	3	0	2	2	9 (16.4%)
Female	'06-'25	0	0	0	0	0	0	0 (0.0 %)
	'26-'45	0	0	0	0	0	0	0 (0.0 %)
	'46-'65	1	0	0	1	0	0	2 (14.3 %)
	'66-'85	0	0	0	1	0	0	1 (5.3 %)
	'86-'00	0	0	0	0	0	0	0 (0.0 %)
	2001	0	0	0	0	0	0	0 (0.0 %)
	2002	0	0	0	0	0	0	0 (0.0 %)
	2003	0	0	0	0	0	0	0 (0.0 %)
	2004	0	0	0	0	0	0	0 (0.0 %)
	2005	0	0	0	0	0	0	0 (0.0 %)

Finally, length also indicates the gender. Male names and female names are different with respect to length. First, names with four or five morae are found in male names (e.g., Daisuke and Sinnosuke) but not in female names. Second, a number of monosyllabic male names are observed after 1985 (e.g., Shun and Yuu), whereas *Rin* is the only monosyllabic female name in the data. Third, the mean length of given names also shows the gender difference. As illustrated in Table 6, male names are longer than female names in general: Male names are 3-mora long or longer while female names are 3-mora long or shorter. With respect to the number of syllables, male names have been becoming shorter.

TABLE 6. LENGTH.

	Male									
	'06-'25	'26-'45	'46-'65	'66-'85	'86-'00	2001	2002	2003	2004	2005
Syllable	2.83	2.87	2.91	3.00	2.52	2.45	2.37	2.37	2.52	2.51
Mora	3.17	3.07	3.19	3.36	3.03	3.03	3.00	2.93	2.96	3.00
	Female									
	'06-'25	'26-'45	'46-'65	'66-'85	'86-'00	2001	2002	2003	2004	2005
Syllable	2.47	2.94	2.71	2.53	2.64	2.50	2.48	2.45	2.40	2.40
Mora	2.53	3.00	3.00	2.68	2.67	2.60	2.54	2.55	2.54	2.52

So far, I have shown that there are five types of phonological gender differences in Japanese given names. They are summarized as in Table 7. Among the five phonological gender differences, initial syllables, final syllables, and heavy syllables refer to syllabic structures. With regard to length, both syllables and morae play roles: monosyllabic names refer to syllabic structures whereas names with four or five morae refer to the number of morae. The phonological gender differences reveal that syllables play significant roles in determining the gender. But it is not clear yet if morae also play major roles, because names with four or five morae are the only phonological gender difference that refers to moraic parts of syllables.

TABLE 7. PHONOLOGICAL GENDER DIFFERENCES IN JAPANESE GIVEN NAMES.

	Masculine	Feminine
Initial Syllables (Onset Cs)	<ul style="list-style-type: none"> · k- (especially <i>ke-</i>) · s- (especially <i>soo-</i> and <i>shoo-</i>) · t- (especially <i>ta</i>) · ryoo- · d- 	<ul style="list-style-type: none"> · Onsetless Syllables (especially <i>a-</i>) · sa- · h- (<i>hu-</i> and <i>ho-</i>) · Nasals (<i>m-</i> and <i>n-</i>) · j- · w-
Final Syllables	<ul style="list-style-type: none"> · -o (–1965) · -shi, -ji (–1985) · -ki (1946–) · -ke, ta, to (1966–) · -ma (2002–) 	<ul style="list-style-type: none"> · -ko, -mi · -ka (1966–) · -na (1986–) · -o (2001–)
Heavy Syllables	· Yes	· No
Palatalized Cs	· Yes	· No
Length	<ul style="list-style-type: none"> · Monosyllabic Names · Names with Four or Five Morae 	

Vowels in Japanese Given Names. The previous section introduced phonological gender differences in Japanese given names and showed that syllables play roles in determining the gender. Focusing on vowels in Japanese given names, this section explores the roles of morae in determining the gender of Japanese names. The data analyzed in this section were collected from Daiichi Seimei (1987) and Meiji Yasuda Seimei (website). Unlike the analysis in the previous section, the date was not divided into stages of 20 years and only distinct names, i.e., 109 male and 121 female names, were analyzed for this part of the study.

First, I divided those names into groups based on length. As illustrated in Table 8, names consisting of three light syllables are most common. More than 50% of male and female names consist of three light syllables.

TABLE 8. LENGTH (Σ = SYLLABLE, M = MORA).

	1 σ 2 μ	2 σ 2 μ	2 σ 3 μ	2 σ 4 μ	3 σ 3 μ	3 σ 4 μ	3 σ 5 μ	4 σ 4 μ	4 σ 5 μ
Male Names	6	5	21	2	55	12	1	5	2
Female Names	2	43	11	0	65	0	0	0	0

Table 9 shows vowels in the final syllable. Male and female names are similar with respect to vowels in the last syllable: [a], [i], and [o] are most common. Vowels in the initial syllable are shown in Table 10. Table 10 reveals both similarity and difference between male and female names. The similarity is that [a] and [i] are commonly used in both male and female names. The difference is that [o] is more common in female names and long vowels [u:] and [o:] are more common in male names. As discussed in the previous section, [o] in female names is becoming more popular and the long vowel is a masculine feature. The facts that [o] is more common in female names and long vowels are more common in male names support the analysis. Table 11 shows vowels in the second syllable of names consisting of three light syllables. As shown in Table 9, names consisting of three light syllables are most common. Male and female names are similar with respect to vowels in the second syllable: [e] is least common. Tables 9, 10, and 11 indicate that male and female names have a number of common features with regard to vowels. Difference is found only in vowels in the initial syllable.

TABLE 9. VOWELS IN THE FINAL SYLLABLE.

	-a	-i	-u	-e	-o	-uu	-oo	-in	-un	-en	-on
Male Names	27	34	6	8	25	2	4	1	1	1	0
Female Names	31	34	7	6	38	2	0	2	0	0	1

TABLE 10. VOWELS IN THE INITIAL SYLLABLE.

	a-	i-	u-	e-	o-	uu-	oo-	in-	un-	en-
Male Names	37	15	3	5	5	12	19	1	0	6
Female Names	48	33	8	7	15	4	2	1	1	0

TABLE 11. VOWEL IN THE SECOND SYLLABLE (NAMES CONSISTING OF THREE LIGHT SYLLABLES).

	-a-	-i-	-u-	-e-	-o-
Male Names	11	13	15	4	12
Female Names	16	14	14	3	18

Table 12 shows combinations of vowels found in Japanese given names consisting of three light syllables. As illustrated in Table 12, various combinations of vowels are possible and 40 distinct combinations of vowels are observed in names consisting of three light syllables. Among them, 8 combinations are specific to male names and 9 combinations are specific to female names, whereas 23 combinations are shared by male and female names. Any common features are not found in the combinations of vowels specific to male or female names.

As discussed in the previous section, syllables play crucial roles in determining the gender of Japanese given names. This section suggests that the moraic parts of syllables, i.e., vowels, do not play major roles in determining the gender. That is, the syllable is a prosodic unit that plays a crucial role in determining the gender of Japanese given names.

TABLE 12. COMBINATIONS OF VOWELS (NAMES CONSISTING OF THREE LIGHT SYLLABLES).

	a-a-a	a-a-i	a-a-e	a-a-o	a-i-a	a-i-i	a-i-o	a-u-a	a-u-i	a-u-u
Male Names		2		5	2	3	1	5	3	1
Female Names	3	3	2	3	1	1	2	4	5	
	a-u-o	a-e-i	a-e-e	a-e-o	a-o-i	a-o-o	i-a-a	i-a-i	i-a-u	i-a-o
Male Names	4	1		1	3	2	1		1	1
Female Names	1	1	1		4		1	1	1	1
	i-i-i	i-i-o	i-u-a	i-u-i	i-e-u	i-e-o	i-o-i	i-o-u	i-o-o	u-a-a
Male Names	1		1	1	1	1	3	1	1	1
Female Names		3		1		1	4		3	
	u-i-o	e-i-a	e-i-o	e-u-i	e-u-o	o-a-u	o-i-o	o-o-a	o-o-i	o-o-o
Male Names	1	2	1				2	1	1	
Female Names	1	1	1	1	2	1	4	3	1	3

3. CONCLUSION.

In this study, I have discussed 3 things. One, Japanese given names reveal five types of phonological gender differences. Two, syllables play crucial roles in determining the gender of Japanese given names. Three, the number of morae plays a role in determining the gender. But, vowels, the moraic parts of syllables, do not play a significant role in determining the gender.

Japanese is a mora-based language. But it has been reported that syllables also play roles (Kubozono 2003, among others). This study gives another piece of evidence that syllables play roles in Japanese. The present study reveals that the syllable is a prosodic unit that plays a crucial role in determining the gender of Japanese given names and vowels, parts of syllables, do not play major roles. It is not clear yet, however, if the other parts of syllables, i.e. consonants, play roles in determining the gender. In future research, the role of consonants in determining the gender of Japanese given names needs to be studied.

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