

PRAGMATICS AND WORD ORDER IN WAYAMPI

by

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Wayampi, a language of the Tupi-Guarani family, exhibits variable word order which is not explained by syntactic factors. This thesis finds that topic continuity (as counted using referential distance and persistence measurements) is not associated with word order variation. The presence of certain discontinuities, however, tend to occur with preverbal order. Also, focused information appears clause-initially.

Through studies based on text counts, this thesis shows that word order in Wayampi is dependent on pragmatic rather than syntactic features.

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TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION	1
Theoretical Background	2
Terminology	6
Pragmatic Factors Which May Affect Word Order	7
II. TOPIC CONTINUITY	13
Referential Distance and Persistence . .	13
Methodology	14
Results of Referential Distance	15
Results of Persistence	20
III. DISCOURSE DISCONTINUITIES	23
Types of Discontinuities	23
Methodology	24
Statistical Significance	26
Results	28
IV. FOCUS	34
Focus Morphemes	34
Focus and Word Order	35
V. CONCLUSIONS	38
APPENDIX	
A. SAMPLE WAYAMPI TEXT	41
B. REFERENTIAL DISTANCE	44
C. PERSISTENCE	46
D. DISCONTINUITY CHARTS	48
E. CHI-SQUARE TABLES	67
REFERENCES	76

LIST OF TABLES

Table	Page
2.1 Raw Scores for Referential Distance Cross-Tabulated with Syntactic Properties and Word Order	16
2.2 Referential Distance Cross-Tabulated with Word Order	17
2.3 Referential Distance Cross-Tabulated with Word Order	19
2.4 Persistence of All Subject and Object Noun Phrases Cross-Tabulated with Word Order .	20
2.5 Persistence of Subject Noun Phrases Cross-Tabulated with Word Order	21
3.1 Number of Noun Phrases Co-occurring with each Discontinuity	25
3.2 Chi-square Values for Cross-Tabulation of Word Order with Seven of Eight Discontinuities and Compared with All Eight Discontinuities as a Base; Ranked by Confidence Level	29
3.3 Chi-square Values for All Discontinuities Except <i>ajaire</i> and:	30
3.4 NEW Cross-Tabulated with Word Order	31
3.5 Combinations of NEW and Discontinuities with Probabilities Closest to NEW	32
4.1 Four Discontinuities (<i>New</i> , <i>Loc</i> , <i>Theme</i> , and <i>ky'y</i>) and Focus Cross-Tabulated with Word Order	37

CHAPTER ONE
INTRODUCTION

This thesis tries to discover the contexts and pragmatic functions which govern word order in Wayampi, a Brazilian Indian language of the Tupí-Guaraní family. Approximately 360 people in northern Brazil and southern French Guiana speak the dialect under consideration in this study (*Ethnologue* 1989:104).

The texts which comprise the basis for this study were collected by Gary Olson from the Wayampi speaker Kurikuri. Allen and Cheryl Jensen edited, glossed, and translated these texts. They left these texts at the linguistics department of the University of Oregon when they came to a Working Conference on Amazonian Languages in 1987.

I am limiting this study to the order of noun phrases which comprise subjects and objects. As far as this analysis goes, I use a semantic definition of subjects and objects in Wayampi. Subjects are the most agentive entity while objects are the most patient-like entities in transitive clauses. In intransitive clauses, the subject is the only entity directly coded on the verb.

Whether the referents are coded as full noun phrases or not, Wayampi uses prefixes on the verb which make it clear

which cross-reference the persons of the subject and/or object.

I ignore clauses with copular constructions and with a numerical predicate. (These contain only two nouns, a noun and a demonstrative, or a noun and a number, in either order.) The eight texts used in this study have a total of 265 clauses and 106 noun phrases which were subjects and objects. I use the clause divisions given in the texts.

This study incorporates narrative texts only. Narrative is the most basic genre to start with, primarily because of the marginal role of the hearer (Givón 1984:239-240). Since the narrator is the only one speaking, I can dispense with such problems as turn-taking, different speech intents, and clarification of misunderstandings. In addition, the participants in a narrative are kept distinct from each other, and the textual sequencing of events closely matches that of their occurrence (Grimes 1975:34).

In this chapter, I first discuss theoretical background on word order of language in general, some terms used throughout the paper, and types of pragmatic information that can affect word order.

Theoretical Background

Word Order

In 1963, linguist Joseph Greenberg published a seminal article on word order in language. For the purposes of this

paper, I will discuss only a small section of his research which is relevant to this analysis.

In studying the grammars of languages in different areas of the world and from different language families, Greenberg compared the usual order for subject, verb, and object across languages. He noted the six possible combinations of subject (S), verb (V), and object (O) as follows:

SVO	VOS
SOV	OSV
VSO	OVS

Greenberg's research applies primarily to languages in which the order of S, V, and O remains consistent in simple, declarative sentences. English is an example of such a language. It depends heavily on word order to code syntactic information such as subject versus object. (For English, a semantic definition of subject and object is inappropriate: subject agreement with the verb, where applicable, and word order are much better indications of subject and object.) The sentence

The girl ate three sandwiches (SVO)

is normal and acceptable, whereas

The girl three sandwiches ate (SOV)

sounds stilted and unnatural, though it is understandable.

Finally,

Three sandwiches ate the girl (OVS)

object) with the relative word order of other syntactic features. Typological studies provide the backbone for discovering what characteristics are universally true of language. Generally, such studies are based on syntactic features and have included languages in which pragmatic features are more relevant to word order than the assumed syntactic categories are (Mithun 1987:325). As more studies are made on pragmatics and word order, languages which exhibit pragmatically motivated word order should be separated from studies of syntactic typology.

Terminology

Before proceeding with the rest of the discussion, it will be helpful to define some terms used throughout this study.

A *noun phrase* is a group of words which includes at the very least a noun and sometimes additional describing or delimiting words. *Car* is a noun phrase, as well as *the car* and *the rusty old car with newly painted fluorescent purple bumpers*.

A *mention* is any noun phrase, pronoun, or other marker which refers to the entity in question. For example, in a conversation about the aforementioned vehicle, one might hear: *I enjoy watching people's expressions when they see the monstrosity cruising the streets. My dog always barks at the ugly beast when it rolls by.* In this text, the

monstrosity, the ugly beast, and it are all mentions of the rusty old car with newly painted fluorescent purple bumpers.

A referent is the entity to which a noun phrase, pronoun, or other marker refers. All of the mentions above are to the same referent.

Pragmatic Factors Which May Affect Word Order

The pragmatic factors mentioned in this section are used in later chapters of this study. Where possible, I give an example to show that the pragmatic factor discussed co-occurs with word order variation in at least one real language.

New

New information is information which has not been in the central attention of the speaker or hearer. This includes information which is being introduced into the discourse for the first time, as well as information which was last mentioned some time ago and is no longer being actively tracked. For example, answers to non-rhetorical questions generally contain new information. Given information is currently being tracked. Given includes that which has already been mentioned previously and other shared (or assumed shared) information.

The first time a referent enters a discourse, it needs to be introduced as new so that the hearer can place it into a mental file for later usage. If the referent is not subsequently mentioned for some time, the file may be

"closed" so as to make it inaccessible as given information. If this happens, then the speaker must reintroduce the referent as though it were new if it is to be used again.

All six of the following Russian sentences can be translated as "Viktor defends Maksim":

(SVO)	Viktor zasciscájet Maksíma
(SOV)	Viktor Maksíma zasciscájet
(OSV)	Maksíma Viktor zasciscájet
(OVS)	Maksíma zasciscájet Viktor
(VSO)	Zasciscájet Viktor Maksíma
(VOS)	Zasciscájet Maksíma Viktor

(Data come from Comrie 1979:92.) In the Russian sentences above, given information precedes new information. For example, in the question *Kto zasciscájet Viktora?* 'Who defends Viktor?' *Viktor* and *defend* comprise given information. If the speaker responds using a full sentence, the answer would be *Viktor zasciscájet Maksíma*, in which the new information appears last. Likewise, if the question were *Kogó zasciscájet Maksím?* 'Whom does Maksim defend?' the answer would normally be *Maksím zasciscájet Viktor*.

Besides the distinction between new and given information, several other factors may have an effect on word order in different languages.

Continuity

Another pragmatic factor which may affect word order in some languages is continuity. Discourse can, perhaps, be compared to a rope. Each cord of the rope represents a different continuity of discourse, such as time, a participant, location, or theme. Where the time changes

(such as in a flashback or skipping over a few years), the cord which represents time is cut at that point. Each cutting of the cords of the rope is a discontinuity in discourse.

One language in which a variation in word order associates with discontinuities is Tagalog. Although the normal word order of Tagalog is V x ang NP x, sometimes ang NP precedes the verb. (The morpheme *ang* precedes that noun which corresponds to subject in other languages. Anything else that may come in the sentence occurs after the verb in either position where x occurs.) The following two examples exhibit normal word order.

bumili ng aklat ang babae
 buy book woman
 'The woman bought a book.'

bago ang bahay ng lalaki
 new house of man
 'The man's house is new.'

When inverted word order occurs, the morpheme *ay* appears between the inverted noun phrase and the verb, as in the following example:

ang bahay ay bago
 house new
 'The house is new.'

In studying word order inversion in Tagalog, Barbara Fox (1985) compared inverted word order with the occurrence of certain continuities: a change in participants, change in action, or a reversal of discourse expectations (more relevant for pronominal usage). She found that word order

is more likely to invert as the number of disruptions in continuity increases. Thus, the inverted sentence above would be more likely when there is a change in participants or action continuity.

Topic

The topic is what is being talked about (Dik 1984:42). If we look at a single English sentence, it may seem that the subject is always the topic; this is not necessarily true. As far as this paper is concerned, the term topic conveys a concept which encompasses more than a sentence. Context is important, then, for determining topic. The well-known children's rhyme is an example:

Humpty Dumpty sat on a wall.
 Humpty Dumpty had a great fall.
 All the king's horses and all the king's men
 Couldn't put Humpty together again.

Humpty Dumpty is the topic of the whole rhyme, even of the final sentence which has *all the king's horses and all the king's men* as subject and *Humpty* as object.

Similarly, in the following sentences

What happened to your turtle?
The cat ate it.

the turtle is the topic of the conversation.

In a sense, everything is a topic to some degree. The degree of topicality is the degree to which an entity is continued as a topic over a portion of a text. In some languages, what is more topical may precede the verb

(Russian), while in others, topical information generally follows the verb (Papago).

Focus

For the purposes of this study, I will use the term focus to refer to the most important or salient information which the speaker intends the hearer to receive (Dik 1984:42). This may or may not be new information. A speaker puts information in focus in order to contrast that information with what s/he assumes the hearer knows or is expecting (Chafe 1976:33), or to supply information which is missing from an otherwise assumed proposition.

In English, stress is commonly used to mark focus. The underlined word is stressed.

I need to go to the bank. (not the store as you thought)

Information questions and answers to them always have the missing information in focus. In the following English example, the information requested and given has the heaviest stress of the sentence.

*Where did you go?
(I went) to the store.
Did you go yesterday or the day before?
(I went) yesterday.*

In the analysis of Wayampi, I use the term focus to apply to contrastive information only. This eliminates the obvious overlap between new information and focus in questions and replies.

In the next chapter, I discuss a methodology for measuring topicality and the results of applying this methodology to the Wayampi text data. Chapter three describes a discontinuity study. Chapter four discusses focus and chapter five is a summary and comment chapter.

CHAPTER TWO

TOPIC CONTINUITY

This chapter studies the association of word order with topicality or topic continuity. Givón (1983) introduces a methodology for measuring topicality through measuring referential distance, potential interference, and persistence. I will use only referential distance and persistence measurements in this study. This chapter discusses these topic continuity measurements, explains specific factors taken into account in my study, describes how I counted the data, and shows the results of the counts.

Referential Distance and Persistence

Referential distance measures the number of clauses since a referent was last mentioned. The values range from one (a very continuous topic) to an arbitrarily maximum value of twenty (a highly discontinuous topic). The first time a referent is mentioned, it receives the arbitrarily maximum value of 20. If the last mention of a referent occurred beyond the 20-clause limit, the referential distance assigned is 20.

We can also look forward in the text to see how a referent persists. In particular, the measurement of persistence counts how frequently the referent shows up in the next ten clauses. The possible values range from 0 (never appears) to 10 (appears in each clause). The higher

the value, the more continuous the referent. The more a referent persists, the more we assume it is highly topical.

Referential distance measures the distance between two mentions of the same referent; persistence measures the frequency of mentions of the same referent within a set distance. These two counts may seem to be measuring the same thing in two different ways: mentions with a low referential distance seem likely to exhibit a high persistence value. However, this is not necessarily true. Referents must have several mentions with a low referential distance value within a limited number of clauses in order to have a high persistence value. Referential distance counts clauses; persistence counts mentions. While referential distance counts backwards to determine whether the distance makes a difference, persistence measures whether a NP which marks a future topic is coded differently from a NP which encodes a non-topic.

Methodology

In this study, I first separated the subjects from objects to see if the categories of subject and object differed in their word order patterns. For the same reason, I also separated the subjects according to the transitivity of the verb. (Some languages treat noun phrases differently depending on a combination of subject and object relations and transitivity.) Transitive verbs allow an object (as in *Phillip hit Harry*), while intransitive verbs do not (as in

Harry disappeared). Objects, by definition, can occur only in transitive sentences. A language may treat transitive subject, intransitive subject, and object differently, or group two or more of them together in different patterns.

As my main goal is to account for variations in word order, I made charts comparing word order with referential distance and persistence. Appendix B contains a chart showing the referential distance score for each NP (listed by text and clause number); Appendix C contains a chart showing the persistence of each NP. All charts are gridded into rows and columns. Across the top of each chart are three main columns which separate the noun phrases by subject, object, and transitivity of the clause. The headings are: Subject of transitive (S_t), Subject of intransitive (S_i), and Object of transitive (O). I divided each of these columns in half: one for the pattern NP-V (the noun phrase before the verb), the other for V-NP (noun phrase after the verb). On the referential distance charts, I numbered the rows from one to twenty; on the persistence charts, I numbered the rows from 0 to 10.

Results of Referential Distance

Table 2.1 shows the raw referential distance scores obtained. Note that the scores gravitate towards the extremes of the scale. That is, few NPs appear in the middle (especially upper middle) range of the scale.

Raw Scores for Referential Distance Cross-Tabulated
with Syntactic Properties and Word Order

RD	Preverbal			Postverbal		
	S _t	S _i	O	S _t	S _i	O
20	3	20	13	-	4	5
19	-	-	-	-	-	-
18	-	-	-	-	-	-
17	-	-	-	-	-	-
16	-	-	-	-	-	-
15	-	-	-	-	-	-
14	-	-	-	-	-	-
13	-	-	1	-	-	-
12	-	-	-	-	-	-
11	-	-	-	-	-	-
10	-	-	-	-	-	-
9	-	1	-	-	-	-
8	-	1	-	-	-	-
7	-	2	-	1	-	1
6	-	1	-	-	-	-
5	1	-	2	1	-	-
4	-	2	-	-	-	-
3	1	4	1	2	3	-
2	-	4	1	5	-	1
1	6	6	-	6	4	3
Total	11	41	18	15	11	10

Table 2.1

The number of tokens, especially in the postverbal sample, is too small to make many generalizations. With more data, the gaps on the lower end of the scale would probably fill in. It is hard to say whether or not more data would change the upper end of the scale. Especially noticeable is the absence of postverbal subjects of transitives with a referential distance of 20. We need more data in order to determine whether this is an artifact of the small amount of data.

Because of the small number of tokens in the data sample, I disregarded differences of subject and object and transitivity of the clause, taking into account only whether the noun occurred before or after the verb. The results are shown in Table 2.2. Also included are the average referential distance and median values for each word order.

Referential Distance Cross-Tabulated
with Word Order

RD	Preverbal		Postverbal	
	#	%	#	%
20	36	51.4	9	25.0
19				
18				
17				
16				
15				
14				
13	1	1.4		
12				
11				
10				
9	1	1.4		
8	1	1.4		
7	2	2.9	2	5.6
6	1	1.4		
5	3	4.2	1	12.8
4	2	2.9		
3	6	8.6	5	13.9
2	5	7.1	6	16.7
1	12	17.1	13	36.1
Total	70	100	36	100
Average	11.9		6.6	
Median	20		2	

Table 2.2

The averages are rather different. Preverbal NPs have a higher average referential distance value, showing that

there tends to be a larger gap between mentions for preverbal than for postverbal NPs. However, as mentioned before, the maximum value of twenty is arbitrary. Averages do not accurately reflect the central tendency when an extreme value is arbitrary. Keeping this in mind, we can still note that the general tendency shown in the averages is for the preverbal noun phrases to associate with a more discontinuous topic.

Table 2.2 makes it obvious that a greater percentage of the preverbal NPs are maximally discontinuous. This leads to the hypothesis that preverbal position is for new or previously less topical information.

Although the averages of the two word orders show some difference with regard to referential distance, the medians are more revealing. The median shows the score which is at the center of the distribution. The arbitrarily maximum value for a first mention does not weight the median score. The median score of 20 for preverbal order reflects the fact that over half of the preverbal noun phrases have referents which are first mentions or not talked about for a long time. The median of 2 for postverbal order, on the other hand, reflects more continuous and recently mentioned referents. Possibly postverbal position contains given information.

These observations are interesting, but not necessarily statistically significant. To determine to what extent the

distribution might be due just to chance, I ran the data through the chi-square test. The chi-square test compares the observed with the expected values if a distribution were to be random, given the number of parameters and total number of tokens. The null hypothesis states that referential distance has no relationship to the relative order of noun phrase and verb. P indicates the probability of accepting the null hypothesis as true and ϕ (ϕ) measures the strength of the relationship. Table 2.3 shows referential distance cross-tabulated with pre- and postverbal word orders. By collapsing the referential distance values into two categories (ten and above, versus below ten), we can dispense with the effects of the arbitrarily maximum value. Scores of ten or above reflect a relatively discontinuous referent, while values below ten reflect a more continuous topic.

Referential Distance Cross-Tabulated with Word Order

RD	NP-V	V-NP	Total
≥ 10	37	9	46
< 10	33	27	60
Total	70	36	106

$$\chi^2=6.419 \quad df=1 \quad p<0.025 \quad \phi=0.246$$

Table 2.3

Since the null hypothesis has less than 2.5% chance of being correct, we can reject it and claim that there likely

is an association between referential distance and word order.

Results of Persistence

A modified persistence chart, shown in Table 2.4, cross-tabulates persistence values with the position of NPs vis-à-vis the verb. Also shown is the average persistence for each word order.

Persistence of All Subject and Object Noun Phrases
Cross-Tabulated with Word Order

Persistence	NP-V	V-NP	Total
10	3	0	3
9	2	1	3
8	6	0	6
7	2	4	6
6	2	3	5
5	4	1	5
4	7	4	11
3	2	3	5
2	8	6	14
1	16	7	23
0	18	7	25
Total	70	36	106
Average	2.84	2.89	

Table 2.4

The spread here is similar for both columns. I calculated the average persistence for each column to see whether the order of NP and V is reflected in the persistence values. The averages show virtually no difference between the preverbal and postverbal noun phrases with regard to persistence of the referent. However, we can

separate subject NPs from object NPs to see if there is a difference.

Persistence of Subject Noun Phrases
Cross-Tabulated with Word Order

Persistence	NP-V	V-NP	Total
10	3	0	3
9	2	1	3
8	6	0	6
7	2	4	6
6	2	3	5
5	4	1	5
4	7	2	9
3	2	2	4
2	6	5	11
1	9	4	13
0	9	4	13
Total	52	26	78
Average	3.75	3.04	

Table 2.5

Again, preverbal and postverbal subject NPs show only a slight difference in average persistence. (The number of objects is too small to consider separately.) Thus, we can reject the hypothesis that persistence associates with the relative order of noun phrase and verb. In other words, noun phrases referring to entities which are anticipated as being topical in the following portion of text do not show preference for either word order.

In sum, the persistence measurement shows that the anticipated importance, in so far as this is reflected by frequency, of a referent in the text has no real bearing on the relative order of noun phrase and verb. The referential

distance measurement, however, shows that preverbal order tends to occur with new referents or with referents which have not been mentioned for some time; postverbal order is more likely to occur when a referent is more continuous.

In sum, new, less continuous or not previously topical information tends to occur before the verb; conversely, given or continuous information tends to appear postverbally.

The distinctions mentioned here--between new and given, continuous and less continuous, topical and non-topical--fall short of explaining all instances of word order variation. In particular, forty-one noun phrases remain unexplained: nine instances of postverbal order co-occurring with a high referential distance and thirty-two instances of preverbal word order co-occurring with a referential distance of less than ten.

CHAPTER THREE

DISCOURSE DISCONTINUITIES

As mentioned in chapter one, discontinuity is a break in some thread of discourse. In this chapter, I examine several different types of discontinuities relative to the word order patterns that co-occur with them.

Types of Discontinuities

In the referential distance count from chapter two, the median of 20 for preverbal noun phrases indicates that over 50% of the preverbal NPs are new. In this chapter I consider the introduction of a new participant (NEW) to be a type of discontinuity.

I also consider a change in the place of the main action to be a type of discontinuity (LOCATION). I do not count it as a discontinuity in location when participants leave the stage but the main action of the narrative remains at the same place.

When action changes in time (such as skipping over a few years or going back in time), I count this as a discontinuity in temporal setting (TEMP).

I also count a change in theme as another discontinuity. Theme is a rather difficult concept to identify, but I consider it to be a discontinuity in theme when there are fairly obvious changes in the overall activity that is occurring, or in perspective of the action.

For example, in one text which tells the story of Americans coming and a great famine, I consider it to be a discontinuity in theme when the speaker begins to talk about where he was and what he was doing at the time of the famine. I counted another discontinuity in theme when the discussion returns to the Americans and Indians four clauses later. Fifteen clauses after that, the speaker states that he returned to the Oiapoque River area, which I also counted as a discontinuity in theme.

If the subject of the clause is different from the subject of the previous clause, I also considered this to be a type of discontinuity (DS).

Finally, I count three Wayampi words as indicative of discontinuity. *Ajaire* 'after that' has a temporal sense and often appears when participants change location. *Amē* has no direct English translation. Sometimes it occurs (with or without a noun) to indicate a change in subject. Sometimes it occurs when the narrative event line starts after a brief description at the beginning of a text. Finally, the morpheme *ky'y*, which is glossed FINAL, seems to indicate the end of an episode, or a one time action which no longer takes place. Sometimes it occurs after the phrase *awyjepa* 'the end.'

Methodology

The charts in Appendix D record the position of the noun phrases and occurrence of discontinuities for each

clause. To quantitatively measure discontinuity, I assigned one point to each type of discontinuity mentioned above. (The first clause of a text is maximally discontinuous.) For each clause, I marked which discontinuities occurred; if a noun phrase occurred, I marked whether it occurred as subject of transitive, subject of intransitive, or object, and its position vis-à-vis the verb.

Some of the types of discontinuities that I considered occurred only a few times with noun phrases. Table 3.1 lists the number of NP tokens for each discontinuity and the percentage of the number of tokens of the discontinuity for that word order. Many of the nouns had more than one discontinuity so the percentages do not add up to one hundred. The totals given in the last row of the chart are the number of noun phrases for that word order.

Number of Noun Phrases Co-occurring
with each Discontinuity

	NP-V		V-NP		Total	
	#	%	#	%	#	%
NEW	33	47.1	6	16.6	39	36.8
Theme	13	18.6	2	5.6	15	15.2
LOC	12	17.1	3	8.3	15	15.2
ky'y	5	7.1	2	5.6	7	6.6
DS	41	57.1	13	36.1	65	50.9
amē	9	12.9	3	8.3	12	11.3
TEMP	11	15.7	3	8.3	14	13.2
ajaire	1	1.4	4	11.1	5	4.7
Total	70		36		106	

Table 3.1

Statistical Significance

To determine which discontinuities show a statistically significant association with word order, I used the chi-square test. The contingency coefficient (C) or phi (ϕ) measures the strength of an association. For a two by two table, we use ϕ ; for a larger table, C. Phi is obtained by dividing chi-square by the total number of tokens and taking the square root. To obtain C, we divide chi-square by chi-square plus the number of tokens and then take the square root.

In using this statistical methodology, I took the number of discontinuities as the independent variable (charted on the horizontal axis) and the word order (preverbal or postverbal) as the dependent variable (charted on the vertical axis). Due to the small number of instances of noun phrases which co-occurred with more than three discontinuities, I conflated the upper limit of the scale to include three and above. Thus the horizontal axis reads, from left to right, "0," "1," "2," and "Greater than or Equal to 3." The largest number of discontinuities that I observed in a single clause was five.

To discover exactly which factors are most significantly associated with word order, I first calculated chi-square for all of the discontinuities combined. This is listed in line 6 of Table 3.2. It is significant at the 0.05 level. When something is significant at this level, we

0.05 level. When something is significant at this level, we can reject the null hypothesis which, in this case, states that discontinuity and word order do not associate. Consequently, we can say that discontinuity associates with word order.

I then hypothesized that some of the discontinuities that I consider may not be as significant as others in association with word order. To see if any particular discontinuity makes a great difference in word order, I removed a single discontinuity from consideration and recalculated χ^2 for the association with word order. "Removing a discontinuity" means that I ignored that particular type of discontinuity when counting the number of discontinuities in each clause. This allowed me to isolate the influence of a single discontinuity type.

I then compared the probability of the null hypothesis being true obtained for this combination to the base value for all continuities combined. Since I was looking at what happens when I removed a discontinuity, I consider a lower chi-square value and a lower probability of being able to reject the null hypothesis as true, as evidence that the excluded discontinuity is important in terms of word order. Likewise, if the probability of being able to reject the null hypothesis as true is higher after removing a particular type of discontinuity, then I assume that that particular discontinuity is less influential on word order.

seven discontinuities: NEW, TEMP, LOC, theme, DS, *amē*, and *ky'y*. I recalculated chi-square for these discontinuities associated with word order; the results are shown in the last line of Table 3.2. Next, I compared these values with those obtained for all discontinuities combined. Without *ajaire*, the contingency coefficient is higher and probability for being able to reject the null hypothesis as true is higher. As a result, I interpret the data to indicate that *ajaire* associates weakly with word order.

Results

The following tables present the chi-square value, degrees of freedom, probability, and contingency coefficient or phi value for each set of discontinuities listed. All of the original chi-square tables are found in Appendix E.

In Tables 3.2 and 3.3, NEW makes the most difference in the numerical values of χ^2 , probability level, and C. In Table 3.2, the factors are ranked by χ^2 and C values.

Chi-square values for Cross-Tabulation of Word Order
with Seven of Eight Discontinuities and Compared
with All Eight Discontinuities as a Base;
Ranked by Confidence Level

Discontinuities	χ^2	df	p <	C
all except NEW	2.881	3	0.500	0.163
all except DS	6.097	2	0.050	0.233
all except theme	7.017	3	0.100	0.249
all except LOC	7.151	3	0.100	0.251
all except <i>ky'y</i>	7.810	3	0.100	0.261
all	8.018	3	0.050	0.265
all except <i>amē</i>	8.608	3	0.050	0.274
all except TEMP	8.661	3	0.050	0.275
all except <i>ajaire</i>	10.998	3	0.025	0.307

Table 3.2

A strikingly lower chi-square value and a much lower probability for being able to reject the null hypothesis as true is obtained when the discontinuity of NEW is omitted. A 0.500 probability indicates no correlation between word order and discontinuities when NEW is omitted. Thus, I conclude that NEW is an essential factor to include when comparing word order and discontinuities.

When any of the discontinuities of theme, location, and *ky'y* are eliminated from consideration, the probability for the null hypothesis being true is higher than that for the base line of all discontinuities combined. In terms of word order, then, each of these alone appears to have more bearing on word order than does the combination of all discontinuities taken together.

The exclusion of discontinuities of different subject, *amē*, and TEMP show the same probability as that of the base line. Although DS explains quite a few preverbal NPs otherwise unaccounted for, taken alone it is not quite as "predictive" of word order as are some other discontinuities. While more than half of the preverbal NPs are DS, over one third of the postverbal NPs also contain a subject different from the preceding clause.

Finally, excluding *ajaire* made the value of χ^2 more significant over the base line of all discontinuities taken together. That is, we have a stronger association between order and discontinuity when *ajaire* is not included as a measure of discontinuity. Thus, I factored out *ajaire* as a measure of discontinuity and recalculated chi-square, again removing one discontinuity at a time. This time "all except *ajaire*" is the new base line. Again, the factors are ranked by χ^2 and C values.

Chi-square Values for All Discontinuities
Except *ajaire* and:

	χ^2	df	p <	C
NEW	5.371	2	0.100	0.220
DS	8.024	2	0.025	0.265
theme	9.692	3	0.025	0.289
<i>amē</i>	9.827	3	0.025	0.291
LOC	9.857	2	0.010	0.292
<i>ky'y</i>	9.860	3	0.025	0.292
(all)	10.998	3	0.025	0.307
TEMP	11.588	3	0.010	0.314

Table 3.3

Both Tables 3.2 and 3.3 show that a temporal discontinuity associates with a lower probability for being able to reject the null hypothesis and that new information makes the most difference in the value for chi-square when it is omitted as a discontinuity. Most of the other types of discontinuities are very similar to each other in probability or C value. DS, theme, $am\bar{e}$, and $ky'y$ are ranked in the same probability level. Theme, ame , LOC, and $ky'y$ have very similar C values. Thus, NEW not only appears to be the most crucial discontinuity associated with word order, but also is the discontinuity which is most different from the others numerically. To see if NEW was significant as the only discontinuity associated with relative word order, I calculated NEW as the only discontinuity in a 2 x 2 chi-square table.

NEW Cross-Tabulated with Word Order

	Given	New	Total
NP-V	37	33	70
V-NP	30	6	36
Total	67	39	106

$$\chi^2=8.230 \quad df=1 \quad p<0.005 \quad \phi=0.279$$

Table 3.3

Since the probability is less than 0.5% that new information does not associate with word order, we can reject the null hypothesis with some certainty and claim that NEW clearly correlates with word order.

I then decided to try different combinations of discontinuities with NEW. I took the discontinuities closest to NEW in the ranking in Table 3.2 and ran a chi-square test on them to see if they increased the significance over that with NEW as the only discontinuity.

Combinations of NEW and Discontinuities with Probabilities Closest to NEW

Discontinuities	χ^2	df	p <	ϕ
NEW, theme, ky'y	12.141	1	0.001	0.338
NEW, LOC, theme, ky'y	10.345	1	0.005	0.312
NEW, LOC, theme	10.333	1	0.005	0.312
NEW and ky'y	8.687	1	0.005	0.286
NEW, LOC, ky'y	8.630	1	0.005	0.285
NEW	8.230	1	0.005	0.279
NEW and theme	7.922	1	0.005	0.273
NEW and LOC	7.922	1	0.005	0.273
NEW and DS	7.076	1	0.010	0.258

Table 3.4

All of the combinations shown in Table 3.4 are significant with regard to relative word order. With the exception of the combination of NEW and DS, the chi-square values here are much higher than those in other tables; I would like to suggest that this is at least partially due to disregarding the less relevant discontinuities.

From the comparisons shown in Tables 3.1 to 3.4, I conclude that new information is the most crucial in terms of relative word order. After new information, the discontinuities of location, theme, and ky'y are the most significant discontinuities studied here.

Although discontinuities associate with word order variation, discontinuities alone cannot explain relative word order. In the following chapter, I discuss the relevance of focus to word order variation in Wayampi.

CHAPTER FOUR

FOCUS

In this study, I have so far compared referential distance, persistence, and various discontinuities with word order. A pragmatic factor which I have not yet taken into account is focus.

Focus Morphemes

I assume that focus in general is marked by the morphemes *te* (glossed 'emphasis') and *ko* (glossed 'assertion'). Information accompanied by the morpheme *te* almost always appears clause-initially, whether that information is expressed by a noun, verb, or locative word, as the sentences (1)-(3) illustrate.

- (1) Amenikē te o-eraa kū
 American EMPH 3-take PL
 It was the American who took them away.
- (2) Kuu pupe te karamoe remē panary kū mijā
 Cuc River in EMPH long-ago TIME Wayana PL PREVIOUS
 The Wayana Indians were previously in the Cuc River
 region.
 (It was the Cuc River region where the Wayana Indians
 used to live.)
- (3) O-jawa te o-o-pa rewamū
 3-flee EMPH 3-go-COMPL because
 because they all fled

The scope of *te* seems to be over a single word or phrase. In contrast, *ko* seems to mark focus on the truth value of a whole proposition, rather than a single element of a clause. For example, in the conversation in sentences

(4)-(5), an ancestor and a spirit argue about what the ancestor really said:

- (4) Etapiraī rā-gwe ā aī-gwe
 Arrowhead FUT-FRMR DEM tooth-FRMR
 "'This tooth would have been good for an arrowhead,'
 ere no-ko ije, e'i sie ajā amē
 2S:say ?-ASSERT 1S 3:say HSY spirit CONSEQUENCE
 you said about me!" the spirit said.
 (...is what you said about me!" the spirit said.)

- (5) N- a- 'e -i no-ko
 NEG 1SI say NEG ? ASSERT
 "I didn't either say it!"

These two types of focus can occur in the same clause, as shown in (6):

- (6) "A-po te ko a-wyjy a-a ipi no,"
 1S-jump EMPH ASSERT 1S-descend 1S-go CUSTOM ?
 e'i sie
 say HSY
 "It's by jumping that I always get down," he said.
 ("Jumping is how I always get down," he said.)

I do not further consider *ko* in this study because its domain is over more than a single noun phrase and the concern in this study is strictly with order of noun phrases vis-à-vis the verb.

Focus and Word Order

In the data, nearly all words or phrases followed by *te* appeared first in the clause. However, when a verb is followed by *te*, usually no noun phrase appears, so we cannot strictly determine whether *te*-marked verbs occur before noun phrases. There were only four instances of noun phrases marked with *te*, and all appear before the verb. Although this is not enough instances to say with surety that NPs in

focus always precede the verb, it does seem to be a general tendency, not only for subjects and objects, but also for obliques.

There is also a single instance, shown in (7), of the morpheme *korejū*, glossed 'LIM/CNTRST,' which I assume means 'limiting or contrastive.'

- (7) *Amenikē korejū o-posiko kewe Morokopoti pe upa.*
 American LIM/CNTRST 3-work here Molocopote at 3beSTAT
 Only the American was working at Molocopote.

The noun phrase marked with *korejū* appears before the verb.

In sum, I hypothesize that when a noun phrase is pragmatically marked for focus, it occurs before the verb in all instances.

In all, focus accounts for only six noun phrases in this data, a mere 5.7% of the total; of the preverbal noun phrases which refer to given entities, 16.2% can be explained by focus. Combining focus with the discontinuities of new, location, theme, and *ky'y* in a chi-square table gives a highly significant chi-square value.

Four Discontinuities (New, LOC, Theme, and *ky'y*)
 and Focus Cross-Tabulated with Word Order

	-	+	Total
NP-V	21	49	70
V-NP	26	10	36
Total	47	59	106

$$\chi^2=15.505 \quad df=1 \quad p<0.001 \quad \phi=0.382$$

Table 4.1

Table 4.1 shows a higher chi-square value and a greater strength of correlation than any other combination in this study. Although focus is not significant on its own in terms of all of the data, it is one of several pragmatic factors which are significant when combined.

CHAPTER FIVE

CONCLUSIONS

In this study, I have looked at word order in Wayampi in terms of various pragmatic factors. Noun phrases which occur with discontinuities, especially the Wayampi word *ky'y*, the introduction of a new participant, or a change in location or theme, tend to occur before the verb. Information in focus appears clause-initially. Noun phrases which are more continuous or given tend to occur after the verb.

In spite of these observations, the word order of Wayampi is not perfectly explained. The pragmatic factors discussed here account for slightly over 70% of the data, leaving about 29% unexplained. This analysis does not account for twenty-one preverbal noun phrases; further study might discover another factor which correlates with word order. Also of interest are the exceptions to the pragmatic principles mentioned here--namely, the ten preverbal noun phrases which co-occur with at least one of the discontinuities of *new*, *ky'y*, location, and theme.

Obviously pragmatic principles are necessary in describing the word order variation found in Wayampi. I expect that further study should find other pragmatic factors which contribute to the overall word order patterning.

Wayampi is an example of a pragmatically ordered language. As such, its presence in a syntactic typology is inappropriate. For typological studies, Wayampi should be compared with other languages which depend primarily on pragmatic factors for word order.

APPENDICES

APPENDIX A

A SAMPLE TEXT

wayjna31.txt (Olson text 10)

31.1

Amerikanu ipo jawa -r -e -wa o -api.
 Amerikanu UNATTEST jaguar LK regarding NOM 3:I shoot
 An Indian man named Amerikanu shot a jaguar hunter.

31.2

O -jawa aja -ire o -o kupa.
 3:I flee DEM1 after 3:I go SBJ:PL
 They (the Indians) fled.

31.3

Wime e -r -ena pe o -o o -waē kupa.
 there 1SG:II LK place to 3:I go 3:I arrive SBJ:PL
 They came to my place.

31.4

A'e o -o te ipo.
 DEM 3:I go EMPH UNATTEST.
 He (Americanu) left.

31.5

I -moma'e-kwe kū tui -pa.
 3:II thing COLLECT PL 3:beSTAT COMPL
 All their (Indians) materials were there (at the abandoned
 village).

31.6

O -mo -po -po -pa ipo jawa -r -e -wa
 3:I CAUS jump RED COMPL UNATTEST. jaguar LK regarding NOM
 kū i -moma'e kū.
 PL 3:II thing PL
 The cathunters threw all their materials away,

31.7

Yrapa kū, turuwa kū.
 arrow PL clay-pot PL
 arrows, clay pots.

31.8

O -jawa aja -ire o -o kupa.
 3:I flee DEM1 after 3:I go SBJ:PL
 Afterwards they (Indians) fled and went away.

- 31.9
 Jawa -r -e -wa kū o -api kupa -ire,
 jaguar LK regarding NOM PL 3:I shoot SBJ:PL after
 after they shot the cathunters.
- 31.10
 e -r -ena pe o -waē kupa.
 1SG:II LK place to 3:I arrive SBJ:PL
 they arrived at my place.
- 31.11
 Aja -ire o -o amū oka pe.
 DEM1 after 3:I go UNSPEC village to
 After that they went to another village.
- 31.12
 O -waē wejī kupa.
 3:I arrive again SBJ:PL
 They arrived later.
- 31.13
 Aja -ire o -o Wajapuku pe.
 DEM1 after 3:I go Oiapoque-River to
 Afterwards they went to the Oiapoque River.
- 31.14
 O -o kupa ky'y.
 3:I go SBJ:PL FINAL
 They finally went away.
- 31.15
 E -r -eraa kupa.
 1SG:II LK take SBJ:PL
 They took me.
- 31.16
 E -r -erekwa-we o -o
 1SG:II LK wife also 3:I go
 My wife also went.
- 31.17
 E -kujā kū-we o -o panakū mowy amē.
 1SG:II sister PL also 3:I go backpack carry CONSEQUENCE
 My sisters also went to carry backpacks.
- 31.18
 I -moma'e kū oro -mowy.
 3:II thing PL 1EX:I carry
 We carried their belongings.

- 31.19
 O -o aja -ire Wajapuku r -y mya kyty
 3:I go DEM1 after Oiapoque-River LK water downriver to
 kupa.
 SBJ:PL
 After that they went down the Oiapoque River.
- 31.20
 Kamopi r -upi pe aja -ire o -waē o -o kupa.
 Camopi LK by ? DEM1 after 3:I arrive 3:I go SBJ:PL
 After that they arrived in the area of Camopi.
- 31.21
 Wime aja -ire Aritani pe o -o kupa.
 there DEM1 after Aritani-River to 3:I go SBJ:PL
 After that they went to the Aritani River.
- 31.22
 O -jawa o -o kupa.
 3:I flee 3:I go SBJ:PL
 They went, fleeing.
- 31.23
 Non-u -'ā -i aja -ire kupa.
 NEG 3:come FUT NEG DEM1 after SBJ:PL
 They will not come back anymore.
- 31.24
 O -jawa te o -o -pa rewamū.
 3:I flee EMPH 3:I go COMPL because
 Because they all fled.
- 31.25
 Jawa -r -e -wa kū wyi o -kyje kupa.
 jaguar LK regarding NOM PL from 3:I fear SBJ:PL
 Because they were afraid of the cathunters.
- 31.26
 Non-u -'ā -i ike kyty kupa ky'y.
 NEG 3:come FUT NEG here to SBJ:PL FINAL
 They won't come here anymore.
- 31.27
 Awyje o -o kupa.
 permanently 3:I go SBJ:PL
 They went away for good.
- 31.28
 Jawa -r -e -wa o -api -api kupa rewamū.
 jaguar LK regarding NOM 3:I shoot RED SBJ:PL because
 Because they shot a cathunter.

APPENDIX B
REFERENTIAL DISTANCE

RD	Subject V_t		Subject V_i		Object	
	NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
20	31.1 34.1 36.3		01.1 01.9 31.5 31.16 31.17 32.2 32.4 32.21 33.1 34.7 35.1 35.1 35.18 36.1 36.21 37.1 37.5 37.8 37.20 37.22	01.31 33.4 33.11 33.17	01.32 31.1 31.17 33.3 33.9 33.4 35.14 35.22 36.2 36.9 36.12 36.13 37.17	34.1 36.10 36.11 37.11 37.14
19						
18						
17						
16						
15						
14						
13					31.18	
12						
11						
10						

RD	Subject V_t		Subject V_i		Object	
	NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
9			37.18			
8			35.25			
7		37.34	36.16 36.25			34.13
6			37.19			
5	33.27	31.6			33.8 34.18	
4			33.7 37.28			
3	36.28	01.27 36.10	32.5 33.16 33.28 37.25	32.13 35.12 37.24	31.28	
2		01.14 01.17 01.24 01.40 35.27	36.6 37.9 37.27 37.36		31.9	34.3
1	01.4 01.35 36.17 36.22 37.35 37.37	01.24 01.28 01.34 33.25 34.31 35.25	01.28 33.30 34.10 36.16 36.26 37.21	34.19 34.21 35.16 36.27		01.11 01.18 31.6

APPENDIX C

PERSISTENCE

Persistence	Subject V_t		Subject V_i		Object	
	NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
10			34.7 34.10 36.14			
9	34.1	36.10	35.18			
8	36.17		01.1 01.28 35.1 36.25 37.1			
7		01.14 01.7	32.2 36.26	01.31 33.17		
6	01.35 33.27	01.17 01.24		36.27		
5	36.3	01.34	32.5 33.7 36.1			

Persistence	Subject V_t		Subject V_i		Object	
	NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
4	01.4	01.38	33.1 36.6 36.16 37.20 37.21 37.27	37.24		34.3 35.13
3		01.40 37.34	33.30 37.28			37.14
2	37.35	35.5 36.31	01.9 33.16 37.8 37.22 37.25	33.13 34.19 35.16	33.9 34.4	36.11
1	31.1 36.28	01.25 31.6 33.25	31.16 31.17 35.25 36.21 37.5 37.9 37.30	35.1	01.32 31.17 33.3 34.18 35.14 36.2 36.9	01.18 34.1 37.11
0	36.22 37.37	35.27	31.5 32.4 32.21 33.28 37.18 37.19 37.36	33.4 33.11 34.21	31.1 31.9 31.18 31.28 33.8 35.22 36.12 36.13 37.17	01.11 31.6 36.10

DISCONTINUITY CHART

Clause	LOC	TEMP	Theme	NEW	DS	ajaire	amẽ	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
01.1	x	x	x	xx	x						x			
01.2														
01.3														
01.4					x		x		x					
01.5														
01.6					x									
01.7							x							
01.8														
01.9				x	x								x	
01.10					x									
01.11														x
01.12														
01.13					x									
01.14					x					x				
01.15														
01.16					x									
01.17					x		x			x				
01.18														x
01.19														

DISCONTINUITY CHART

Clause	LOC	TEMP	Theme	NEW	DS	ajaire	amē	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
01.20														
01.21														
01.22					x									
01.23,24					x	x		x		x				
01.25					x					x				
01.26														
01.27					x					x				
01.28	x										x			
01.29														
01.30						x								
01.31		x	x	x	x	x					x			
01.32				x									x	
01.33					x		x							
01.34					x					x				
01.35					x		x		x					
01.36														
01.37														
01.38										x				
01.39					x									

DISCONTINUITY CHART

Clause	LOC	TEMP	Theme	NEW	DS	ajaire	amē	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
31.1	x	x	x	x	x				x				x	
31.2					x	x								
31.3	x													
31.4	x													
31.5	x				x						x			
31.6					x					x				x
31.7														
31.8	x				x	x								
31.9													x	
31.10														
31.11	x					x								
31.12														
31.13	x					x								
31.14								x						
31.15			x											
31.16				x	x						x			
31.17				x	x						x		x	
31.18													x	
31.19	x		x		x	x								

DISCONTINUITY CHART

Clause	LOC	TEMP	Theme	NEW	DS	ajaire	amē	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
31.20	x					x								
31.21	x					x								
31.22														
31.23		x												
31.24														
31.25														
31.26								x						
31.27														
31.28													x	

DISCONTINUITY CHART

Clause	LOC	TEMP	Theme	NEW	DS	ajaire	amẽ	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
32.1	x	x	x	x	x									
32.2				x	x						x			
32.3	x			x										
32.4				x	x						x			
32.5					x						x			
32.6		x				x								
32.7														
32.8								x						
32.9	x				x			x						
32.10			x											
32.11														
32.12		x				x								
32.13	x	x			x	x	x							
32.14			x		x	x								
31.15														
32.16														
32.17														
32.18														
32.19	x	x			x	x	x							

DISCONTINUITY CHART

Clause	LOC	TEMP	Theme	NEW	DS	ajaire	amẽ	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
32.20														
32.21				x	x	x	x				x			
32.22					x									
32.23					x	x								
32.24					x		x	x						
32.25					x									
32.26					x									
32.27					x									
32.28		x	x		x	x								
32.29						x								
32.30	x							x						
32.31								x						
32.32														

DISCONTINUITY CHART

Clause	LOC	TEMP	Theme	NEW	DS	ajaire	amē	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
33.1	x	x	x	x	x						x			
33.2														
33.3				x									x	
33.4				x	x						x			
33.5														
33.6				x										
33.7					x						x			
33.8				x									x	
33.9													x	
33.10														
33.11											x			
33.12		x	x			x								
33.13					x	x					x			
33.14	x				x									
33.15						x								
33.16	x	x	x		x						x			
33.17					x							x		
33.18														
33.19														

DISCONTINUITY CHART

Clause	LOC	TEMP	Theme	NEW	DS	ajaire	amẽ	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
33.20														
33.21														
33.22														
33.23														
33.24														
33.25					x					x				
33.26			x		x	x								
33.27				x	x				x					
33.28					x						x			
33.29														
33.30					x			x			x			
33.31														
33.32								x						
33.33														
33.34														

DISCONTINUITY CHART

Clause	LOC	TEMP	Theme	NEW	DS	ajaire	amē	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
34.1	x	x	x	x	x				x					x
34.2				x	x									
34.3					x									x
34.4				x									x	
34.5					x									
34.6														
34.7	x										x			
34.8														
34.9														
34.10								x			x			
34.11														
34.12														
34.13														x
34.14					x									
34.15														
34.16														
34.17														
34.18													x	
34.19	x											x		

DISCONTINUITY CHART

Clause	LOC	TEMP	Theme	NEW	DS	ajaire	amē	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
35.1	x	x	x	x	x						x			
35.2														
35.3														
35.4														
35.5						x	x							
35.6	x	x		x	x									
35.7					x		x							
35.8	x	x												
35.9														
35.10														
35.11	x	x												
35.12					x		x				x			
35.13							x							
35.14				x									x	
35.15					x		x							
35.16	x	x				x	x				x			
35.17														
35.18			x	x	x		x				x			
35.19														

DISCONTINUITY CHART

Clause	LOC	TEMP	There	NEW	DS	ajaire	amě	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
35.20														
35.21														
35.22				x									x	
35.23														
35.24														
35.25					x						x			
35.25										x				
35.26														
35.27										x				

DISCONTINUITY CHART

Clause	LOC	TEMP	Theme	NEW	DS	ajaire	amē	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
36.1	x	x	x	x	x						x			
36.2				x									x	
36.3				x	x				x					
36.4														
36.5					x									
36.6					x						x			
36.7														
36.8														
36.9				x									x	
36.10				x	x					x				x
36.11				x										x
36.12				x									x	
36.13				x									x	
36.14											x			
36.15	x		x			x								
36.16					x		x				x			
36.17					x				x					
36.18					x			x						
36.19					x									

DISCONTINUITY CHART

Clause	LOC	TEMP	Theme	NEW	DS	ajaire	amē	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
36.20	x	x	x											
36.21				x	x		x				x			
36.22									x					
36.23	x					x								
36.24								x						
36.25			x		x						x			
36.26								x			x			
36.27		x										x		
36.28					x				x					
36.29					x									
36.30														
36.31										x				
36.32														
36.33								x						
36.34								x						

DISCONTINUITY CHART

Clause	LOC	TEMP	Theme	NEW	DS	ajaire	amē	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
37.1	x	x	x	x	x						x			
37.2														
37.3														
37.4														
37.5				x	x						x			
37.6														
37.7	x						x							
37.8				x	x		x				x			
37.9					x						x			
37.10	x				x	x	x							
37.11														x
37.12														
37.13						x								
37.14				x										x
37.15														
37.16														
37.17				x									x	
37.18					x						x			
37.19					x						x			

DISCONTINUITY CHART

Clause	LOC	TEMP	Theme	NEW	DS	ajaire	amē	ky'y	Subject V _t		Subject V _i		Object	
									NP-V	V-NP	NP-V	V-NP	NP-V	V-NP
37.20					x						x			
37.21		x	x					x			x			
37.22					x		x				x			
37.23														
37.24					x							x		
37.25				x	x		x				x			
37.26					x									
37.27					x			x			x			
37.28					x						x			
37.29														
37.30			x		x						x			
37.31						x								
37.32						x								
37.33														
37.34										x				
37.35									x					
37.36											x			
37.37									x					
37.38														

APPENDIX E

CHI-SQUARE TABLES

Eight Discontinuities: NEW, Theme,
LOC, *ky'y*, DS, TEMP, *ajaire*, *amē*

	0	1	2	≥3	Total
NP-V	10	26	19	15	70
V-NP	11	17	5	3	36
	21	43	24	18	106

$$\chi^2=8.018 \quad df=3 \quad p<0.050 \quad C=0.265$$

Seven Discontinuities: Theme, LOC,
ky'y, DS, TEMP, *ajaire*, *amē*
(minus NEW)

	0	1	2	≥3	Total
NP-V	21	25	11	13	70
V-NP	12	17	4	3	36
	33	42	15	16	106

$$\chi^2=2.881 \quad df=3 \quad p<0.500 \quad C=0.163$$

Seven Discontinuities: NEW, Theme,
LOC, *ky'y*, TEMP, *ajaire*, *amē*
(minus DS)

	0	1	≥2	Total
NP-V	21	31	18	70
V-NP	19	13	4	36
	40	44	22	106

$$\chi^2=6.097 \quad df=2 \quad p<0.050 \quad C=0.233$$

Seven Discontinuities: NEW, Theme,
LOC, ky'y, DS, ajaire, amē
(minus TEMP)

	0	1	2	≥3	Total
NP-V	10	26	20	14	70
V-NP	12	16	5	3	36
	22	42	25	17	106

$\chi^2=8.661$ df=3 p<0.050 C=0.275

Seven Discontinuities: NEW, LOC,
ky'y, DS, TEMP, ajaire, amē
(minus theme)

	0	1	2	≥3	Total
NP-V	10	23	18	14	70
V-NP	11	17	5	3	36
	21	45	23	17	106

$\chi^2=7.017$ df=3 p<0.100 C=0.249

Seven Discontinuities: NEW, Theme,
ky'y, DS, TEMP, ajaire, amē
(minus LOC)

	0	1	2	≥3	Total
NP-V	11	27	18	14	70
V-NP	12	16	5	3	36
	23	43	23	17	106

$\chi^2=7.151$ df=3 p<0.100 C=0.251

Seven Discontinuities: NEW, Theme,
LOC, ky'y, DS, TEMP, ajaire
(minus amē)

	0	1	2	≥3	Total
NP-V	10	30	18	12	70
V-NP	11	19	3	3	36
	21	49	21	15	106

$$\chi^2=8.608 \quad df=3 \quad p<0.050 \quad C=0.274$$

Seven Discontinuities: NEW, Theme,
LOC, DS, TEMP, ajaire, amē
(minus ky'y)

	0	1	2	≥3	Total
NP-V	12	26	18	14	70
V-NP	12	17	4	3	36
	24	43	22	17	106

$$\chi^2=7.810 \quad df=3 \quad p<0.100 \quad C=0.261$$

Seven Discontinuities: NEW, Theme,
LOC, ky'y, DS, TEMP, amē
(minus ajaire)

	0	1	2	≥3	Total
NP-V	10	26	19	15	70
V-NP	11	19	3	3	36
	21	45	22	17	106

$$\chi^2=10.998 \quad df=3 \quad p<0.025 \quad C=0.307$$

Six Discontinuities: NEW, Theme,
LOC, ky'y, DS, amē
(minus ajaire and TEMP)

	0	1	2	≥3	Total
NP-V	10	26	20	14	70
V-NP	12	18	4	2	36
	22	44	24	16	106

$\chi^2=11.588$ df=3 p<0.010 C=0.314

Six Discontinuities: NEW, Theme,
LOC, ky'y, DS, TEMP
(minus ajaire and amē)

	0	1	≥2	Total
NP-V	12	26	32	70
V-NP	13	17	6	36
	25	43	38	106

$\chi^2=9.827$ df=3 p<0.010 C=0.291

Six Discontinuities: NEW, Theme,
LOC, ky'y, TEMP, amē
(minus ajaire and DS)

	0	1	≥2	Total
NP-V	21	31	18	70
V-NP	20	13	3	36
	41	44	21	106

$\chi^2=8.024$ df=2 p<0.025 C=0.265

Six Discontinuities: NEW, Theme,
ky'y, DS, TEMP, amē
(minus ajaire and LOC)

	0	1	2	≥3	Total
NP-V	11	27	18	14	70
V-NP	12	18	4	2	36
	23	45	22	16	106

$$\chi^2=9.857 \quad df=2 \quad p<0.025 \quad C=0.292$$

Six Discontinuities: NEW, Theme,
LOC, DS, TEMP, amē
(minus ajaire and ky'y)

	0	1	2	≥3	Total
NP-V	12	26	18	14	70
V-NP	13	17	3	3	36
	25	43	21	17	106

$$\chi^2=9.860 \quad df=3 \quad p<0.025 \quad C=0.292$$

Six Discontinuities: NEW, LOC,
ky'y, DS, TEMP, amē
(minus ajaire and theme)

	0	1	2	≥3	Total
NP-V	10	28	18	14	70
V-NP	11	19	3	3	36
	21	47	21	17	106

$$\chi^2=9.692 \quad df=3 \quad p<0.025 \quad C=0.289$$

Six Discontinuities: Theme, LOC,
ky'y, DS, TEMP, amē
(minus ajaire and NEW)

	0	1	≥2	Total
NP-V	21	25	24	70
V-NP	12	19	5	36
	33	44	29	106

$$\chi^2=5.371 \quad df=2 \quad p<0.100 \quad C=0.220$$

One Discontinuity: NEW

	-	+	Total
NP-V	37	33	70
V-NP	30	6	36
	67	39	106

$$\chi^2=8.230 \quad df=1 \quad p<0.005 \quad \phi=0.337$$

Two Discontinuities: NEW and Theme

	-	+	Total
NP-V	33	37	70
V-NP	28	8	36
	61	45	106

$$\chi^2=7.922 \quad df=1 \quad p<0.005 \quad \phi=0.273$$

Two Discontinuities: NEW and LOC

	-	+	Total
NP-V	33	37	70
V-NP	28	8	36
	61	45	106

$$\chi^2=7.922 \quad df=1 \quad p<0.005 \quad \phi=0.273$$

Two Discontinuities: NEW and ky'y

	-	+	Total
NP-V	32	38	70
V-NP	28	8	36
	60	45	106

$$\chi^2=8.687 \quad df=1 \quad p<0.005 \quad \phi=0.286$$

Two Discontinuities: NEW and DS

	-	+	Total
NP-V	19	51	70
V-NP	20	16	36
	39	67	106

$$\chi^2=7.076 \quad df=1 \quad p<0.010 \quad \phi=0.258$$

Three Discontinuities: NEW, LOC, and Theme

	-	+	Total
NP-V	30	40	70
V-NP	28	8	36
	58	48	106

$$\chi^2=10.333 \quad df=1 \quad p<0.005 \quad \phi=0.312$$

Three Discontinuities: NEW, Theme, ky'y

	-	+	Total
NP-V	28	42	70
V-NP	28	8	36
	56	50	106

$$\chi^2=12.141 \quad df=1 \quad p<0.001 \quad \phi=0.338$$

Three Discontinuities: NEW, LOC, and ky'y

	-	+	Total
NP-V	28	42	70
V-NP	26	10	36
	54	52	106

$$\chi^2=8.630 \quad df=1 \quad p<0.005 \quad \phi=0.285$$

Four Discontinuities: NEW, LOC, theme, and ky'y

	-	+	Total
NP-V	26	44	70
V-NP	26	10	36
	52	54	106

$$\chi^2=10.845 \quad df=1 \quad p<0.005 \quad \phi=0.312$$

NEW and Focus

	-	+	Total
NP-V	31	39	70
V-NP	30	6	36
	61	45	106

$$\chi^2=13.282 \quad df=1 \quad p<0.001 \quad \phi=0.354$$

NEW, LOC, theme, ky'y, and focus

	-	+	Total
NP-V	21	49	70
V-NP	26	10	36
	47	59	106

$$\chi^2=15.505 \quad df=1 \quad p<0.001 \quad \phi=0.382$$

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