

**Calgary Working Papers
in Linguistics**
Number 5 Spring 1979



LOGOS

Department of Linguistics
The University of Calgary
2920-24th. Avenue N.W.
Calgary, Alberta, Canada
T2N 1N4

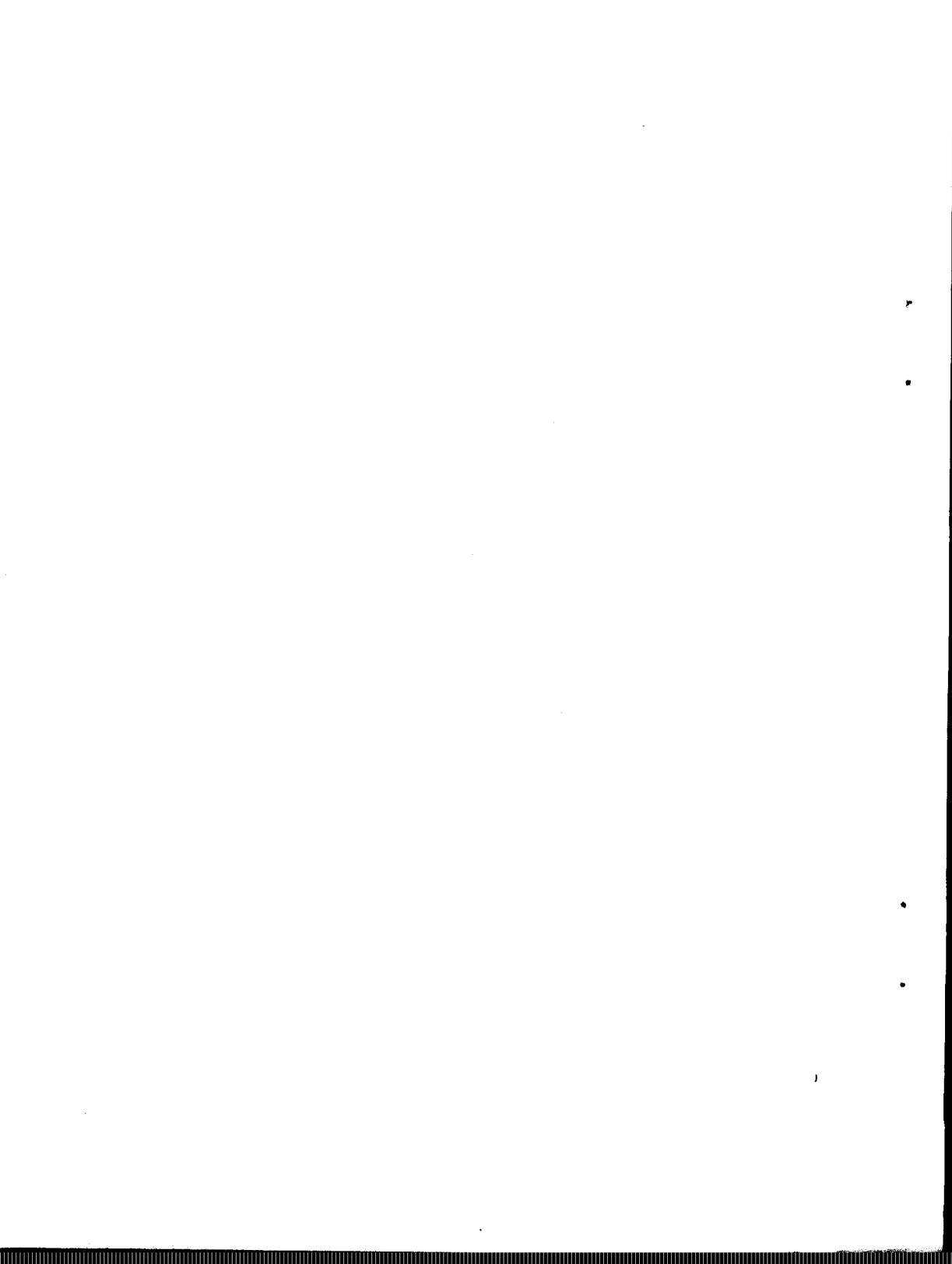


TABLE OF CONTENTS

Dedication	<i>i</i>
Foreword	<i>ii</i>
Towards a Reanalysis of Oceanic Possessives	
. Lorna A. MacDonald	1
Loss and Restoration of Word Final Vowels in Spanish	
. James M. Anderson	19
Explicit and Implicit Communicative Strategies in Children's Narratives	Ronald H. Southerland 25
Classifiers and Subject Prefix Alternation in Athapaskan	
. Dave Henry	35
That's Something That I Wouldn't Want to Have to Account For, Is a Sentence Like This One	Richard Douglas Jehn 51
Particle <u>-sya</u> in Russian: Mystery, or Defunct Grammatical Relation?	Douglas A. Hitch 63
Causes of Rapid Phonological Change: The Case of Atsina and Its Relatives	David H. Pentland 99

DEDICATION

This issue of the *Calgary Working Papers in Linguistics* is dedicated to Dr. Terry J. Klokeid. Had it not been for his initiative, this publication might never have become a reality. The members of LOGOS extend to him their best wishes for success and happiness in the coming years.

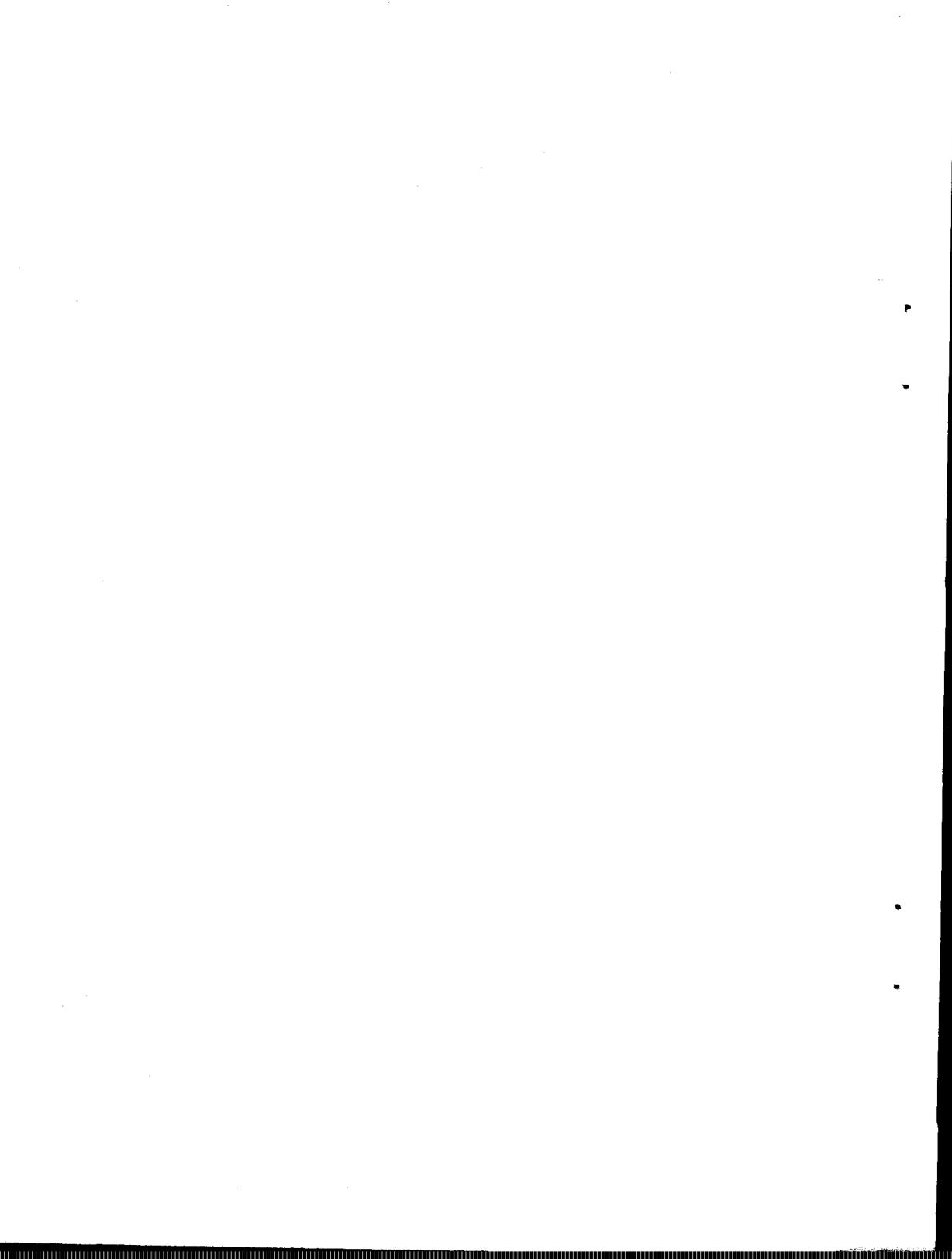
FOREWORD

This issue is the fifth in the series of working papers published by LOGOS, the Student Linguistics Society at the University of Calgary. The series provides a vehicle for faculty members and students to publish current research. These papers represent research in progress and are not to be considered final statements by the authors. The appearance of these articles in the current issue does not preclude their publication in altered form elsewhere.

We wish to express our gratitude to all members of LOGOS and the Department of Linguistics at the University of Calgary for their assistance in the publication of this volume. In particular, we extend our thanks to William D. O'Grady, who acted as Faculty Advisor, and Marilyn Acock, Lorna MacDonald, and Diana Gibbons, who served on the Student Editorial Board. Without their help, this project could not have been completed.

We extend our heartfelt gratitude to Mrs. Charlotte Stewart, who patiently endured long hours typing and correcting the articles in this issue.

The publication of the current volume was supported by a grant provided by the Students' Union at the University of Calgary.



Towards a Reanalysis of Oceanic Possessives

Lorna A. MacDonald

1.0 Introduction

The Oceanic languages, which constitute a major subgroup of the Austronesian language family, consist of over 400 languages spoken in Micronesia, Melanesia and Polynesia. Although the exact subgrouping of Oceanic is uncertain, Pawley (1972) provides support for an Eastern Oceanic subgroup, which consists of languages from the Southeast Solomon Islands, the New Hebrides and Banks Islands, Polynesia, and Fiji, as well as Rotuman and Gilbertese (Pawley 1972:7).

1.1 Previous Studies

Pawley has done extensive research on the reconstruction of both Proto-Oceanic (POC) and Proto-Eastern Oceanic (PEO) (1973, 1972). Included in these studies are reconstructions of the possessive systems of both POC and PEO. Throughout this paper, I have relied heavily on these reconstructions, and frequently draw upon them for examples.

The reconstruction of the PEO possessive system is fairly detailed. In the POC reconstruction available to me, however, only those constructions with pronominal possessors are discussed extensively. However, Pawley states that the possessive system of POC is exemplified by Bauan Fijian (Pawley 1973:169). Since Bauan also conforms to the system reconstructed for PEO (see, for example, 2.4), I will assume that the analysis of PEO possessive constructions with non-pronominal possessors presented in this paper is also applicable to POC.

2.0 Oceanic Possessives

The Oceanic languages are well-known for their complex systems of possession. According to Pawley (1972, 1973), at least three possessive constructions must be reconstructed for both PEO and POC. These constructions are distinguished both by the phonological shapes of their possessive particles, and by the order of constituents. The three possessive constructions are commonly referred to as Inalienable, Edible, and Neutral.

2.1 A Noun Gender System

Previously, scholars studying the Oceanic possessives attributed these three types of possessive constructions to a noun gender system. Each noun was assigned to one of three genders -- Inalienable, Edible, or Neutral -- and this gender assignment determined the possessive construction in which it could occur (see, for example, Codrington 1885:129).

However, recent research suggests that it is the relationship between the head noun and the possessor which determines the type of

possessive construction, rather than an inherent noun gender (see Buse 1960; Lynch 1973; Pawley 1973). Thus, a single noun may function as head in more than one construction type, depending upon the context in which it occurs. For example, Fijian dalo 'taro', will be possessed Edibly if it is intended for consumption; if not, it will be Neutrally possessed.

- (1) Fijian: na no-na dalo
Art Boss-his taro 'his taro' Neutral
- (2) na ke-na dalo
Art Poss-his taro 'his taro' Edible (Lynch 1973:76)

In these Fijian examples, dalo is possessed either Edibly or Neutrally. Both Edible and Neutral constructions can be classed together as Alienable (vs. Inalienable) due to their common syntactic behaviour when utilized with pronominal possessors (see 2.4). However, a single noun may be possessed both Alienable and Inalienably, as is demonstrated by the following examples from Aroma:

- (3) Aroma: gage-ku
leg-my 'my leg' Inalienable
- (4) ga-ku gage
Poss-my leg 'my leg (e.g., of chicken) to eat'
Alienable
(Lynch 1973:78)

In (3), gage, as a body part of the possessor, is possessed Inalienably. In (4), gage refers to the body part of some unspecified animal, which the possessor intends to eat; it is therefore Edibly possessed.

The fact that a single noun can be possessed¹ in more than one type of construction indicates that it is not inherent noun gender which determines the particular construction utilized, but rather that the construction is determined by the relationship which exists between the head noun and the possessor:²

Different types of possessive constructions are thus seen as a classification of relationships and not of nouns (Lynch 1973:76).

2.2 Head Noun-Possessor Relationship

The three types of possessive constructions in PEO/POC, corresponding to the three kinds of relationships which may exist between head noun and possessor are Inalienable, Edible and Neutral.³

The Inalienable construction is used to indicate a 'natural part of a whole' (e.g., body parts), kin relations, and relational positions (behind', 'in front of', etc.). The Edible construction generally indicates that the head noun is intended for consumption; there are some exceptions,

however, which will not be discussed in this paper (see Pawley 1973:162). The Neutral construction is more difficult to define; here, it will be defined negatively, in the sense that it includes relationships which are neither Inalienable nor Edible.

2.3 Possessive Particles

All Oceanic possessive constructions include a possessive particle (herein glossed as Poss) which serves to distinguish the three types of constructions. In Pawley's reconstructions of PEO possessives, these particles also vary according to the type of possessor present in the construction, whether pronominal or non-pronominal. POC possessive particles utilized with non-pronominal possessors were not included in Pawley's 1973 reconstruction; however, the POC particles used with pronominal possessors are included in the following chart:

Possessor Relationship	Pronominal		Personal Name	Inanimate
	POC	PEO	PEO	PEO
Inalienable	*ø		*qi	*ni
Edible	*ka		*ki	
Neutral	*na	*no	*ki	

Figure 1 Pawley's Reconstruction of PEO/POC Possessive Particles

Human possessors which are non-pronominal and non-personal name have been omitted from the chart. They were not discussed in detail in Pawley's POC reconstruction. In his reconstruction of PEO, Pawley noted that human possessors were apparently utilized in either personal name-type or pronominal-type possessive constructions,⁴ although in the former, Poss *ni may have been obligatory (Pawley 1972:35). Because of this uncertainty, they will not be examined as a separate category here.

2.4 Possessor

The type of possessor affects the possessive construction in two ways:

- (a) the shape of the possessive particle (see Fig. 1)
- (b) the order of constituents

In all the PEO constructions involving personal name and inanimate possessors, and in Inalienable constructions with pronominal possessors, the order of constituents is as follows:

ART HN POSS PSR

where: ART = Article
HN = Head Noun
POSS = Possessive Particle
PSR = Possessor

For example: Inalienable construction with pronominal possessor:

- (5) PEO: *na tama- ϕ -mu
Art father-Poss-your 'your sg. father' (Pawley 1972:
34)
- (6) Latora: na limwa- ϕ -ku
Art arm-Poss-my 'my arm' (Ivens 1939:684)

Inalienable construction with personal name possessor:

- (7) PEO: *na tama qi X
Art father Poss X 'X's father' (Pawley 1972:34)
- (8) Bauan: na liga i Lui
Art hand Poss Lui 'Lui's hand' (PEO *qi > Bauan i)
(Pawley and Sayaba 1971:421)

Neutral construction with personal name possessor:

- (9) PEO: *na kiRa ni X
Art adze Poss X 'X's adze' (Pawley 1972:34)

Inanimate possessor:

- (10) PEO: *na ndau ni kayu
Art leaf Poss tree 'tree leaf' (Pawley 1972:34)

When the construction is Alienable, i.e., Edible or Neutral, and the possessor is pronominal, there is a different order of constituents. In this case, both POSS and PSR precede the head noun:

ART POSS PSR HN

For example: Edible construction with pronominal possessor:

- (11) PEO: *na ka-mu qupi
Art Poss-your yam 'your sg. yam' (Pawley 1972:34)
- (12) Roviana: ge-ku ika
Poss-my fish 'my fish' (PEO *ka > Rov. ge)
(Pawley 1973:161)

Neutral construction with pronominal possessor:

- (13) PEO: *na no- η ku wa η ka
Art Poss-my canoe 'my canoe' (Pawley 1972:34)
- (14) Bauan na no-qu vale
Art Poss-my house 'my house' (Pawley and Sayaba
1971:422)

2.5 The PEO possessive constructions can thus be summarized as follows:

Possessor Relationship	Pronominal	Personal Name	Inanimate
Inalienable	(ART) HN *∅ PSR	ART HN *qi PSR	ART HN *ni PSR
Edible	ART *ka PSR HN	ART HN *ki PSR	
Neutral	ART *no PSR HN	ART HN *ni PSR	

Fig. 2 Pawley's Reconstruction of PEO Possessives

The only difference between the constructions presented here and those present in POC is that, in POC, the possessive particle used in Neutral constructions with pronominal possessors is *na rather than *no (Pawley 1973:158).

The complexities of the Oceanic possessive system are readily apparent from this chart. First, the possessive particles have different shapes, according to both the type of construction, i.e., the relationship between the head noun and the possessor, and the type of possessor present, i.e., pronominal or non-pronominal. Secondly, the order of constituents also varies, with one constituent order being utilized in Alienable constructions with pronominal possessors (illustrated in Fig. 2 with double lines), and a second order used in all other cases. If we can assume that the variations in the form of possessive particles and in constituent order are not simply arbitrary but are motivated by some as yet unknown syntactic or semantic considerations (and this is the assumption that will be made here), the following questions must be answered:

- (1) Why do the possessive particles have alternate forms according to the type of possessor present in the construction?
- (2) Why do the possessive particles have alternate forms according to the head noun-possessor relationship?
- (3) Why does the constituent order change in Alienable constructions with pronominal possessors?

Only the first question will be considered in this paper. In order to examine questions (2) and (3), it appears to be necessary to look beyond the possessive constructions themselves to other elements of the grammar of Oceanic, specifically, to prepositional phrases and/or transitive verb constructions. Therefore, questions (2) and (3) are beyond the scope of the present paper.

3.0 Effect of the Possessor on the Possessive Particles

In Fig. 1, the possessive particles for pronominal, personal name

and inanimate possessors were given for all three possessive constructions. Leaving aside for the moment the particle used with inanimate possessors, one can see that the particles for pronominal and personal name possessors do appear to be related: the Inalienable particles are *ϕ and *qi; Edible, *ka and *ki; Neutral, *no/na (PEO/POC) and *ni, for pronominal and personal name possessors, respectively.

It may be argued that the differences in the phonological shapes of the possessive particles, conditioned by the type of possessor present in the construction, exist only synchronically. Historically, both pronominal and personal name possessive particles may have been derived from the set currently used for personal name possessors, i.e.,

	Pronominal		Personal Name
Inalienable	* <u>ϕ</u>	<	* <u>qi</u>
Edible	* <u>ka</u>	<	* <u>ki</u>
Neutral	* <u>no</u> / <u>na</u>	<	* <u>ni</u>

3.1 Inalienable *qi > *ϕ

There is some evidence that Inalienable constructions with pronominal possessors once utilized the particle *qi, such that a development *qi > *ϕ can be posited. In the Northern New Hebrides-Banks Island languages, for example, there is an 'independent noun suffix' which is added to Inalienably-possessed nouns when they are unpossessed (Pawley 1972:115). In Mota, this suffix has the shape -i:

(15) mata-i 'eye' (vs. na mata-na 'his eye')

According to Pawley, this suffix is probably derived from PEO *qi, the possessive particle occurring in Inalienable constructions with personal name possessors. It was then reinterpreted in some languages, either as a part of the noun base, or as a gender marker in unpossessed nouns.

Although it is possible that a particle used with a very restricted class of possessors, i.e., personal name, might be reinterpreted in this manner, this reinterpretation would seem to be a more viable process if the particle had been used with both pronominal and non-pronominal possessors.

In 2.3, it was stated that non-pronominal and non-personal name human possessors could be utilized in either the personal name-type or the pronominal-type possessive constructions. This statement must be modified here: Pawley (1972:35) suggests that, when the head noun is Inalienable, human possessors may have only been utilized with the pronominal-type constructions. Thus, (16), a Neutral personal name-type construction with a human possessor is acceptable; (17), an Inalienable personal name-type construction with human possessor is not acceptable; while (18), an Inalienable pronominal-type construction with human possessor, is acceptable:

- (16) PEO: *na ntalo ni tamwane
Art taro Poss man 'the man's taro'
- (17) (?) *na lima ni tamwane
Art arm Poss man
- (18) *na lima- ϕ -na na tamwane
Art arm-Poss-his Art man 'the man's arm' (Pawley
1972:35)

Therefore, in Pawley's reconstruction of PEO, neither pronominal nor non-pronominal possessors utilize the particle *qi; it is restricted to personal name possessors. However, if we accept Pawley's hypothesis that the 'independent noun suffix' may be derived from *qi, it would appear to be advisable to reconstruct *qi as the possessive particle used with all possessor types in Inalienable constructions. This would render its utilization with Inalienably-possessed nouns far more widespread, and thus provide a more tenable basis for its later reinterpretation.

As it stands, this argument for reconstructing *qi as the possessive particle in Inalienable constructions with pronominal possessors may not be particularly convincing, but there is a further argument to reinforce it. Pawley (1973:158) noted that, in POC,

There is some slight evidence that when a noun was inalienably possessed by certain non-singular pronouns, a particle *(q)i could be inserted between the two.

In Bauan, for example (an EO language), i (< *(q)i) occurs before the first person exclusive plural pronominal possessor:

- (19) na tina-i-keimami
Art mother-i-our exc.pl. 'our mother' (Pawley 1973:158)

In Kuanua, i occurs before all non-singular pronominal possessors in Inalienable constructions:

- (20) lima-i-dat
hand-i-our inc.pl. 'our hands'
- (21) lima-i-mamir 'our inc.dl. hands' (Pawley
1973:158)

According to Pawley (1973:158), Bauan and Kuanua i may be derived from POC personal article,

... which can be assigned to POC on independent evidence, and which also occurs before personal name possessors in certain constructions in the Fijian languages and a good many other Oceanic witnesses. (emphasis added)

The presence of *(q)i in this position suggests that, at some early stage in the development of Oceanic, and perhaps in PEO, the possessive

particle utilized in Inalienable constructions with pronominal possessors was *qi. In the languages which have retained traces of this particle, the development appears to have been *qi > i; in other languages, the development may have been *qi > *i > *∅, or the particle may have been simply lost, i.e., *qi > *∅.

3.2 Edible *ki > *ka; Neutral *ni > *no/*na⁵

Pawley reconstructed PEO/POC *ka and *ki as the possessive particles in Edible constructions, pronominal and personal name possessors respectively, and *no/*na (PEO/POC) and *ni as the particles in Neutral constructions. The problem here is thus one of relating the pairs of forms:

*ki > *ka
*ni > *no/*na

There appear to be two possible ways to relate these particles. For reasons which will be explained below, the second of the two analyses is considered to be more appropriate.

3.2.1 A motivation for the relationship between the pronominal and personal name forms becomes apparent if each particle is analyzed as being composed of two morphemes, the first realized by a consonant and the second by a vowel:

Possessor Relationship	Pronominal	Personal Name
Edible	<u>*ka</u> < <u>*k+a</u>	<u>*ki</u> < <u>*k+i</u>
Neutral	<u>*no</u> < <u>*n+o</u> (PEO) <u>*na</u> < <u>*n+a</u> (POC)	<u>*ni</u> < <u>*n+i</u>

Fig. 3 Reconstruction suggested by Analysis 1

In this analysis, the Edible/Neutral distinction is carried by the initial consonant, with *k- indicating Edible possession and *n- indicating Neutral possession. The morphemes realized by the vowels would then relate to differences in possessor type.

*-i, the vowel in the personal name particles, might then be analyzed as the personal article *i (Pawley 1972:32).⁶ The vowels in the particles used with pronominal possessors, on the other hand, are more difficult to analyze.

In POC, the vowel in both particles was *-a, yielding *ka and *na. This *-a might be related to PEO *(q)a, 'personal article' (Pawley 1972:58). We might therefore suggest that, at some stage in the development from POC to PEO, the vowel in the Neutral particle changed to *-o, yielding an

*a/o contrast in the possessive particles. The motivation for this change is difficult to determine: in the Polynesian languages, the possessive particles are *a and *o, and it is therefore tempting to explain the development of the *-a/*-o contrast in the non-Polynesian languages as an analogical development. However, since the Polynesian languages are Eastern Oceanic, if this kind of analogical development is postulated, it would be necessary to reconstruct the PEO particles as *ka and *na; then demonstrate that the PN languages evolved the *a/o possessives from these particles, and finally demonstrate that the non-PN languages changed the shape of their particles from *ka/*na to *ka/*no, by analogy with the PN system. Then, of course, we are left with the problem of finding a motivation for the development of an *a/*o contrast in the Polynesian languages.

This analysis, then, results in difficulties in accounting for the *a/*o contrast in the Edible and Neutral particles. Furthermore, two additional problems arise, namely (a) inanimate possessors, and (b) irregular reflexes.

(a) Inanimate Possessors

It will be recalled that the particle used with inanimate possessors in PEO has been reconstructed by Pawley as *ni. If the above analysis is accepted, this particle must be analyzed as *n+i. Although the reconstruction of *n- in Neutral possessive constructions is completely regular, the reconstruction of *-i would, according to the analysis, suggest that it is an article preceding inanimate nouns. As was stated above, *i has been reconstructed as a PEO personal article; there is no evidence that it could also be used as an article preceding inanimate nouns.

(b) Irregular Reflexes

Some EO languages do not show regular reflexes of *ka and *no/*na; in these languages, the vowel of one or both particles is e:

Wayan	<u>ke</u> (Edible)	<u>le</u> (Neutral)
Bauan	<u>ke</u> (Edible)	
Rotuman	<u>?e</u> (Edible)	

Pawley (1972:133) states that, in EO, this unexpected vowel correspondence is restricted to Wayan, Bauan and Rotuman. However, its distribution appears to be somewhat more widespread, as is demonstrated by the particles in Sa'a (an EO language) and two non-Eastern languages, Roviana and Manam:

Sa'a	<u>?e</u> (Edible)	<u>ne</u> (Neutral)
Roviana	<u>ge</u> (Edible)	
Manam	<u>ne</u> (Neutral)	

(Pawley 1973:159-161)

Pawley (1973:160) states that this vowel change can be interpreted as resulting from assimilation:

Positing POC *na- rather than *no- or *ne- allows more economical explanation of deviant reflexes, which can

be regarded as exhibiting assimilation to neighboring high vowels before most of the pronominal suffixes, with one variant (*no or *ne) usually generalizing to all contexts at a later stage.

Thus, Pawley regards both PEO *no and the ne variants of POC *na as resulting from one phonological motivation, the assimilation of a low vowel to a following high vowel. I would suggest, however, that while ne does appear to be the result of assimilation, the *no variant cannot be so interpreted. If POC *na became *no before a high vowel, one would expect the vowel in the Edible particle to undergo the same process, since both particles were followed by the same set of pronominal forms, i.e., *ka > *ko. However, the vowel in the Edible particle is reflected only as a or e (Pawley 1972:86).

As was stated above, however, the vowel in both the Edible and Neutral particles is e in some languages, and this change does appear to be the result of assimilation. However, I would suggest that this assimilation was not conditioned by a following high vowel. In PEO, there were 15 possessive pronouns which could be suffixed to the possessive particles.⁷ Of these 15 forms, only 5 contained high vowels in their initial syllables. Thus, if this assimilation was a productive process in PEO, it would be highly restricted.

Thus, this analysis of the possessive particles presents some problems. Specifically, these are (a) the development of an *-a/*-o contrast in The PEO particles; (b) the necessity of reconstructing *i as an article preceding inanimate nouns; and (c) the irregular reflexes of the particles in some daughter languages.

There is a second possible analysis of these two particles which, although not accounting for the development of the *-a/*-o distinction, does provide explanation for the form of the inanimate particle and for the irregular reflexes.

3.2.2 The possessive particles might be segmented as follows:

Possessor Relationship	Pronominal	Personal Name	Inanimate
Edible	<u>*ka</u> < <u>*ki+a</u>	<u>*ki</u>	
Neutral	<u>*no</u> < <u>*ni+o</u> (PEO) <u>*na</u> < <u>*ni+a</u> (POC)	<u>*ni</u>	<u>*ni</u>

Fig. 4. Reconstruction suggested by Analysis 2

The Edible/Neutral distinction is carried by *ki vs. *ni. In the case of personal name and inanimate possessors, these elements alone constitute the possessive particles. In the case of pronominal possessors, *ki and *ni are followed by *-a and *-o/*-a, respectively.

Thus, in this analysis, when the possessor is inanimate, no problem such as that resulting from the first analysis is present: there is no need to arbitrarily reconstruct an inanimate article, *i.

The apparently irregular reflexes of the possessive particles in some daughter languages can then be explained via two phonological processes, namely Vowel Raising and Vowel Fronting.

In the case of the Edible particle, *ki+a, and the POC Neutral particle, *ni+a, the final low vowel might have been raised under the influence of the preceding high vowel; subsequently, the high vowel was lost.⁸ The stages of development would have been:

- (1) *ki + a
- (2) *ki + e (by V-Raising)
- (3) *k + e (by V-Deletion)

In the case of the PEO Neutral particle, the final vowel may have been fronted under the influence of the high vowel:

- (1) *ni + o
- (2) *ni + e (by V-Fronting)
- (3) *n + e (by V-Deletion)

In Bauan, the particle no becomes ne before a high front vowel; although this appears to lend support to the reconstruction of *no as the proto-form, it does suggest that Fronting is a possible phonological process in Oceanic. Alternatively, the languages which exhibit ne as the Neutral particle may have derived this particle from POC *ni+a, rather than through the PEO intermediary.

Further evidence for reconstructing the possessive particles as *ki+a and *ni+o/*ni+a can be drawn from the possessive systems of some other Eastern Oceanic languages, including those of the Guadalcanal-Nggelic group, Nguna, and the Polynesian languages.

3.2.2.1 The Guadalcanal-Nggelic System

The Neutral possessive particle in 3 Guadalcanal-Nggelic languages -- Bugotu, Vaturanga and Nggela -- is ni (Pawley 1972:86). This particle is used with both pronominal and personal name possessors, as is demonstrated by the following examples from Nggela:

- (22) Nggela: mane ni Nggela 'man of Nggela' (Fox 1959:115)
- (23) ni-nggu-a ni tivi 'my garment' (Pawley 1972:104)

the PN possessive system appears to have been modified considerably from the PEO system, with loss of *ki and *ni in most possessive constructions.⁹ At this stage, we are concerned primarily with the fact that a sequence ni + a/o does exist in some PN Outlier languages, thus lending support to the segmentation of the PEO possessive particles as *ki+a, *ni+o.

4. Summary

At this stage of analysis, the suggested reconstruction for the PEO/POC possessive system is as follows:

Possessor Relationship	Pronominal	Personal Name	Inanimate
Inalienable	ART HN <u>*qi</u> PSR	ART HN <u>*qi</u> PSR	
Edible	ART <u>*ki+a</u> PSR HN	ART HN <u>*ki</u> PSR	ART HN <u>*ni</u> PSR
Neutral	ART <u>*ni+o</u> PSR HN (PEO) ART <u>*ni+a</u> PSR HN (POC)	ART HN <u>*ni</u> PSR	

Fig. 5 Proposed Reconstructions

Comparing Fig. 5 with Fig. 2 (Section 2.5), a greater degree of regularity has been achieved in the possessive constructions. Question 1 has been partially answered: the alternative forms of the possessive particles, conditioned by the type of possessor present, are perhaps not quite as discrepant as the previously proposed reconstructions would suggest. In the Inalienable construction, complete regularity has been achieved -- both pronominal and personal name constructions consist of the sequence ART HN *qi PSR.

In the Alienable constructions, however, some discrepancies remain. It is necessary to account for the existence of *-a and *-o in the Edible and Neutral particles utilized with pronominal possessors. In 3.2.1, it was suggested that the *a in the POC forms might be the personal article, and this analysis might be applied to the suggested POC reconstructions, *ki+a and *ni+a. However, we are left with the problem of determining the motivation for the change *-a > *-o in the vowel in the Neutral particle. Assimilation to the following high vowel, as suggested by Pawley, does not appear to be a satisfactory explanation, for reasons elaborated in 3.2.1.

Thus, the existence of the *-a/*-o contrast in the PEO Edible and Neutral particles, a contrast which appears to be functional in the Polynesian languages, and perhaps the existence of any vowel at all in this position remains problematic. In order to find a solution, it appears to be necessary to look beyond the possessive constructions themselves, to other elements in the grammar of Oceanic.¹⁰

Footnotes

¹Following the general practice in descriptions of the Oceanic possessive system, in this paper I will refer to possession of a noun rather than to possession of the referent of a noun.

²Buse (1960:131) notes that, in Rarotongan and perhaps in Polynesian as a whole, there may be a gender system in the making, with the present system being

... a half-way stage, where the A/O distinction, while apparently no longer semantically relevant in all contexts, has nevertheless not ossified into the purely mechanical colligation of given noun-class with given particle-class.

³The North Hebridean-Central Pacific languages have a fourth possessive particle, me, which is utilized when the referent of the head noun is to be drunk by the possessor (Pawley 1972:111). However, there is no evidence that this particle can be traced back to PEO.

⁴Pawley notes, however, that in Inalienable constructions with human possessors, the pronominal-type possessive construction may have been obligatory (see 3.1).

⁵Pawley and Reid (1976:70) suggest that both *na 'common actor/owner' and *ni 'personal actor/owner' should be reconstructed for PAN, as these forms appear to be widespread among AN languages. This might suggest that the *na/*ni contrast in Oceanic is the result of direct inheritance from the proto-forms, and if a reanalysis of the particles is to be made, it should be made at the PAN level.

However, the functions of *na/*ni are not consistent in all the daughter languages, suggesting that considerable reanalysis has taken place. In Kapampangan, for example, a Philippine language, na-ng refers to 'personal actor/owner', and ni-ng to 'common actor/owner'. In another Philippine language, Inibaloi, only ni occurs (Pawley and Reid 1976:70). Within Oceanic, if *ni is considered to be derived from PAN *ni 'personal actor/owner', it would be necessary to account for its use with inanimate possessors.

If Pawley and Reid are correct in reconstructing both *na and *ni in PAN, I would suggest that only the latter form was inherited by the Oceanic languages, and the fact that Oceanic evolved a *na/*ni contrast is a case of convergent development (see Section 3.2.2).

⁶If this analysis is accepted, the Inalienable particle might also be segmented as *q+i.

⁷Pawley (1972:37) reconstructs the PEO possessive pronouns as follows:

- Buse, J. E. 1960. Rarotongan Personal Pronouns: Form and Distribution. *Bulletin of the School of Oriental and African Studies* 23:123-137.
- Clark, Ross. 1976. *Aspects of Proto-Polynesian Syntax*. Te Reo Monograph Series, Linguistic Society of New Zealand: Auckland.
- Codrington, Robert. 1885. *The Melanesian Languages*, Oxford. Amsterdam: reprinted by Philo Press, 1974.
- Fox, C. E. 1959. Some Notes on Nggela Grammar. *Journal of the Polynesian Society* 50:135-169.
- Ivens, Walter G. 1939. A Grammar of the Language of Lotorā, Maewo, New Hebrides. *Bulletin of the School of Oriental and African Studies* 10:679-698.
- Lynch, John. 1973. Verbal Aspects of Possession in Melanesian Languages. *Oceanic Linguistics* 12:69-102.
- Pawley, Andrew. 1972. On the Internal Relationships of Eastern Oceanic Languages. *Studies in Oceanic Culture History* 3, edited by R. C. Green and M. Kelly. Pacific Anthropological Records No 13. Honolulu: Bernice P. Bishop Museum.
- _____. 1973. Some Problems in Proto-Oceanic Grammar. *Oceanic Linguistics* 12:103-188.
- Pawley, Andrew and Lawrence A. Reid. 1976. The Evolution of Transitive Constructions in Austronesian. *University of Hawaii Working Papers in Linguistics* 8.2:51-74.
- Pawley, Andrew and Timoci Sayaba. 1971. Fijian Dialect Divisions: Eastern and Western Fijian. *Journal of the Polynesian Society* 80:405-436.
- Schütz, Albert J. 1969. *Nguna Grammar*. Oceanic Linguistics Special Publication No. 5. Honolulu: University of Hawaii Press.

Loss and Restoration of Word Final Vowels in Spanish

James M. Anderson

The process of apocope in Medieval Spanish offers a glimpse into the interaction of structural and sociological constraints on linguistic behavior.

1. The Problem

Of the word final unstressed vowels /e/, /o/ and /a/, the twelfth and thirteenth century Spanish /e/, and less often /o/ were effaced exposing new consonants and consonant clusters. Written documentation of the period clearly indicates the loss of the vowel in environments where Modern Spanish has sustained the loss and in others where it has not, cf. Latin panem > Old Spanish pan, Modern Spanish pan and Latin noctem > Old Spanish noch (in texts), Modern Spanish noche.

By the fifteenth century, apocoped vowels were restored except after dental consonants, i.e., /l, r, s, n, ć (>θ), d/. The loss and subsequent restoration of these vowels appears to reflect syntagmatic, sociological and paradigmatic aspects of language function. To what extent can these factors be isolated, and their relative influence examined?

2. Old Spanish Texts

In the texts of the period, such as the *Poema de Mio Cid* written circa the middle of the twelfth century, and the *Auto de los Reyes Magos* of about the same time, there was a marked tendency to drop /-e/ after dentals, but a good deal of vacillation occurred in other environments. In the *Primera Crónica General*, however, composed under the direction of Alfonso X about 1270, one notes a more consistent propensity to drop /-e/ (much less often /-o/) in other environments. The loss of the vowel gave rise to words such as duc < duque, trist < triste, calient < caliente, fuert < fuerte, noch < noche, and dond < donde. A few words ending in /-o/ were affected, e.g. Franc < Franco, Diag < Diago and com < como.

Nouns and adjectives ending in /-e/ were the most susceptible to the loss of the vowel while a few proper names and adverbs suffered the loss of /-o/. This introduced new final (-dental) consonants and consonant clusters. Pronouns in enclitic position also underwent effacement of /-e/, e.g., dím < dime, nol < no le, along with a small minority of verb forms, pued < puede, recib < recibe.

The first and early part of the *Crónica* shows the greatest proclivity for the loss of /-e/ to the extent that we find quemblo for que me lo and nimbla for ni me la with the insertion of an epenthetic /b/. King Alfonso X, among other things, appears to have proscribed the practice of dropping the final vowel and the section of the *Crónica* written later in his reign shows alternations again in which both forms were employed, for

example, mont/monte, pris/prise while the earlier reduction of me > m, te > t, le > l, etc. disappeared altogether.

3. Syntagmatic Factors

The syllabic history of Spanish can be characterized by a certain analogous or compatible behaviour between syllable final and word final consonants. Those that occurred in one position also occurred in the other, cf. canto and pan, caldo and mal where /n/ and /l/ in syllable final position are found also in word final position.¹

The loss of a word final vowel in Old Spanish took place first, theoretically, in words of the type pan < pane, col < cole and mes < mese, angel < angelo, where the loss resulted in no new final consonants but simply broadened the distribution of final /n/, /s/ and /l/ etymologically in final position, to encompass more words, cf. en < in, miel < mel and menos < minus. Apocope was then extended to include other dentals, e.g., pared < parete, paz [paç] < pace and mar < mare.

While the consonants /d, r, ç/ had no etymological antecedents in this position they nevertheless were compatible to the system of consonantal distribution by virtue of their occurrence in syllable final position, cf. O.S. parte < partem, cadnado < cat(e)natu, and diezmo [dieçmo] < dec(i)mus.

Throughout the history of Spanish, syllable final and word final positions behave analogously. The loss of a vowel in these environments was perhaps governed by structural motivations to integrate syllable final consonants more firmly in the system through their extension to word final environments.

4. Sociological Factors

Further extension of apocope as seen in the written language of the period exposed new consonants and consonant clusters whose presence in word final position seems to have run counter to the distributional patterns inasmuch as they did not occur etymologically in syllable final position nor in word final position.

The documentation suggests that the loss of the final vowel, under these conditions, occurred among the upper classes of society (those people who could write) but the subsequent reintroduction of these word final vowels (except after dentals) indicates that generalization of apocope was not complete throughout the entire social hierarchy.

Coinciding with the period of apocope, French influence in Spain was strong and French prestige in courtly circles particularly high. Royal alliances, French knights fighting in the Holy War of Reconquest against the Moors and the industrious and esteemed Monks of Cluny all contributed to this Gallic prestige.² French was widely spoken in the upper circles of society.

During this period also a number of French words were incorporated in Old Spanish almost intact, that is, without the final vowel characteristic of Spanish but which had already been lost in Old French, cf. ardiment, arlot, tost, duc and franc, introducing new final consonants and consonant clusters into the language of the upper classes.

The Spanish aristocratic class appears not only to have been familiar with French and borrowed a number of French lexical items, but tended to apocope final vowels which would tend to make Spanish words more like those of French, e.g., Old French [sɛt] and Old Spanish [siet] < Latin sēptem, Modern Spanish [siete], imparting a French quality to Spanish.

Social factors seem to have overridden syntagmatic features of the language for a time, at least among the upper classes of Old Spanish society, resulting in new distribution patterns hitherto alien to the language.

With waning French influence on the peninsula toward the fifteenth century, many of the lexical items borrowed from Gallic sources were replaced by Spanish forms and most final vowels, lost through apocope, were restored.

5. Paradigmatic Constraints

Among verbal paradigms in which final vowels functioned as grammatical markers indicating person, tense and mood, e.g., canto, canta, cante, apocope had little effect. The loss of /-e/ was generalized only among infinitive forms, cantar < cantare, where paradigmatic oppositions were not applicable.³

The effacement of /-e/, affecting invariable nouns, adjectives, and pronouns also had little impact on the grammatical features of the language. Where the loss of a final vowel, as in tío 'uncle' and tía 'aunt' might lead to ambiguity through the loss of the gender morpheme, the disappearance of /-e/ in a word such as noche raised no such problems.

Apocope of /-o/ in phonologically incompatible environments appears restricted to proper names, and a few adjectives and adverbs in which grammatical categories were left little affected. The effacement of this vowel seems to have occurred infrequently, if at all, among variable nouns where it marks masculine gender or among verbs where it marks first person, e.g., canto.

The vowel /-a/ which marks feminine gender among nouns and adjectives and person, tense, and mood among verbs, was always retained except in a few pre-nominal qualifiers.

6. Conclusion

Apocope in Medieval Spanish appears to have been restricted among the lower classes in conformity to syntagmatic (distributional) arrangements of the phonological system but was extended to include many more

environments among the upper echelons of society who consciously modified their speech in accordance with prestigious French models thus overriding syntagmatic restraints.

Grammatical categories of the language expressed in paradigmatic oppositions among nouns, verbs and adjectives acted as restraints on the extension of apocope to final vowels and all environments. The vowel least inhibited by these restraints, i.e., /e/, underwent the furthest extension of effacement.

With the decline of French as the model for apocope in incompatible environments, final vowels were restored indicating that the loss was not complete throughout the various strata of society.

Footnotes

¹There are examples where this compatibility does not appear to hold up as in the word campo as there is no final /-m/ in the language. However, in these positions neutralization occurred which, in this case, neutralized the feature of labiality, i.e., /kaNpo/. Compare the alternate forms in Old Spanish catem and caten.

²From Cluny, France, these monks (Benedictines) established monasteries in Spain, helped transform the Spanish Church and society, and were instrumental in changing the alphabet from the Gothic script to the Carolingian.

³In a few sporadic cases in texts of the period final /-e/ was omitted among verb forms where the loss could be tolerated without much disruption of the grammatical signals, e.g., puedo, puedes, pued (< puede).

References

- Alarcos Llorach, A. 1965. *Fonología Española*. Madrid: Gredos.
- Elcock, W. D. 1960. *The Romance Languages*. New York: Macmillan.
- Gifford, D. J., y Hodcroft, F. W. 1966. *Textos Lingüísticos del Medioevo Español*. Oxford: Dolphin.
- Lapesa, R. 1959. *Historia de la Lengua Española*. Madrid: Escelicer.
- Menendez-Pidal, R. 1926. *Orígenes del Español*. Madrid: Espasa-Calpe.
- Menendez-Pidal, R. 1962. *Manuel de Gramática Histórica Española*. Madrid: Espasa-Calpe.
- Menendez-Pidal, R. 1960. *Poema de Mio Cid*. Madrid: Espasa-Calpe.

Explicit and Implicit Communicative Strategies
in Children's Narratives*

Ronald H. Southerland

1. Introduction

The present study represents an interim report on ongoing research into the nature of the social differentiation of English in Calgary. The data discussed here were gathered in interviews in Victoria School, an elementary and junior high school in a working and lower class district of Calgary. While an ultimate aim of the broader investigation will be the establishment of some correlation between socio-economic status of speaker and language use, this paper will not address such problems. In the appendices are given two sets of narratives elicited from grade six girls (12 and 13 years old) in Victoria School. The data were recorded in a session in which three girls (all friends and members of the same class) and I were present. The narratives came in response to my request first for a story about some "exciting experience" known to the student and second for information about games played by these girls away from school.

2. Narrative Structure

Following Labov (1972) I distinguish between two extremes of narrative. His "minimal narrative" is defined "as a sequence of two clauses which are *temporally ordered*: that is, a change in their order will result in a change in the temporal sequence of the original semantic interpretation . . . ; a minimal narrative [thus] is defined as one containing a single temporal juncture." (1972:360-1) His fully-formed or extended narrative possesses the same "real-life temporal sequence" (Cook-Gumperz 1977:114) as the minimal narrative but is structurally more elaborate, containing as many as six components:

1. Abstract
2. Orientation
3. Complicating action
4. Evaluation
5. Result or resolution
6. Coda.

The label "narrative" might most conveniently be applied to "stories" in the usual sense of that word. Given Labov's temporal ordering condition, however, we may consider any body of connected speech a narrative which exhibits such ordering, without regard to whether a "story" is related. Cook-Gumperz (1977) has thus used narrative as a label for the instruction-giving of children in an experimental situation which she studied. She noted, in fact, that owing to the greater stylistic possibilities afforded by the story-telling narrative, the latter might reflect less well than instruction-giving the temporal ordering condition.

*A slightly different version of this paper was given at the Annual Meeting of the Canadian Ethnology Society, February, 1979, and will appear in the proceedings of that meeting.

3. The Extended Narrative

In the appendices two types of narratives are illustrated -- in Appendix A there is a somewhat extended narrative which gives a vicarious account of an "exciting experience" and uses many but not all of Labov's narrative components; in Appendix B I have included portions of the interview in which three minimal narratives occur. Each of these latter conforms to Labov's minimal condition for "narrativehood", in that it contains a temporal sequencing, which, if violated, would destroy the continuity of the narrative. The components of "The Cheetah" (the longer, more fully-formed narrative) are labelled in the appendix. This narrative contains no abstract or (verbal) evaluation; the latter component is perhaps missing since this is a vicarious account rather than the report of the experimenter of the incident. There are several false-starts which represent to me an attempt by the speaker to be as explicit as possible -- to state, for example, the reason why her father's friend had this "cat", what sort of animal it was, how things stood with the neighbours, etc. Overall, however, the appropriate temporal sequencing of events is maintained. Additionally, this speaker evidenced some skill as a story-teller in that her, in Kernan's terms (1977:91), "expressive elaboration" (including the use of prosodic features such as emphasis and, in two cases, falsetto) considerably heightened the impact of the narrative on the listeners. Having oriented us to the situation in which she heard the story and to the pertinent background underlying the episode, she moved to the result very rapidly and concluded the story not with a verbal but with a prosodic coda. The final clause of the narrative "that he killed the cat" is spoken with increasing rapidity and emphasis, a sort of crescendo and accelerando, followed by a muted giggle. All of this signals the end of the narrative.

"The Cheetah" represents, in general, an effective example of communication. The narrator structured her story well, told it expressively (for which she received an approving response from her audience) and she told it explicitly. The latter point is very important. There is essentially nothing of importance which is left implicit in her account -- from the specification provided for Spot Cash Income Tax to the background details which form part of the discontinuous orientation component in the narrative proper. If one were using Bernstein's categories, restricted and elaborated code, this narrative, though the performance of a working class child, would have to be labelled elaborated. The narrator perceives and takes into account the needs of her audience, assumes very little shared knowledge and structures a maximally explicit narrative. At the end of the story both she and her audience (including one adult) are satisfied that something has been communicated.

4. The Minimal Narratives

The minimal narratives (all of which are statements of the rules for various kinds of skipping) are less satisfactory from the adult perspective. Three such narratives are given in Appendix B. It is clear from these, and from other information not included here, that these girls are definitely aware of the rules of the games and, in fact, of a taxonomy

of skipping games. The rules for "normal skipping" are fairly explicit; those for "double dutch" are less so; and those for "Chinese skipping" are highly implicit. Relative implicitness in speech can be seen as associated with a communicative strategy on the speaker's part which is based on an assumption that a body of knowledge is shared by speaker and addressee. There are several ways in which a linguistic text can exhibit an implicit communicative strategy. In these narratives such a strategy is seen in the use of exophoric (or situational) reference (as in "you just wrap it around like this") and of specialized (or ritualized) vocabulary (as in "double dutch", "underbums", "high skies", etc.). From a Bernsteinian perspective, then, these accounts of skipping rules are increasingly restricted -- that for "Chinese skipping" being the most so. The audience reaction to these narratives did not, however, (apart from my own adult bewilderment) betray any lack of comprehension. It was clear that the narrators' assumption of shared knowledge was accurate with regard to a majority of the audience. Even my attempts to elicit further elaboration on the rules ("It's still hard to figure out how you would do that.") only succeeded in my getting a repetition of the rules from another girl.

5. Communicative Competence

5.1 Communicative Effectiveness

I would suggest that the effectiveness of the communicative strategy underlying "The Cheetah" and the ineffectiveness (from my adult perspective at least) of that underlying the games narratives result from a difference in the communicative competence of these girls and the adult listener. In the games narratives one can point out perhaps three areas in which the communicative competence of the children and the adult differed. Firstly, there is the relative appropriateness of an implicit communicative strategy for the task at hand; it worked for the children as audience but not for the adult. Secondly, there is perhaps an underlying level (below that of strategy) at which the decision was taken whether or not to make the account explicit; this I would call the level of communicative perception. At this level of choice there would be some difference between adult communicative competence and that of the girls. This level may be seen as closely related to or as a function of or as indistinguishable from a process wherein a speaker, in some sense, takes a reading of the audience, addressee, or other relevant aspects of the speech situation, based upon the (third) parameter of "shared knowledge". If there is a perception that knowledge is indeed shared by all concerned, then a more implicit communicative strategy will result. A perception that no such body of knowledge exists would ideally result in a more explicit strategy. I would claim that some process such as this underlay the selection of the two strategies by the girls.

5.2 "Knowledge" and "Use"

Hymes (1972a:282) claims that (communicative) "competence is dependent upon both (tacit) *knowledge* and (ability for) *use*." Each of these

major components can, of course, be seen as multifaceted. I suggest here, for example, that Hymes' *use* might correspond -- at the very least -- to levels termed communicative perception and communicative strategy. *Knowledge*, the underlying, fundamental component, might be seen as containing, among other things, (1) grammatical information, (2) one's norms of interaction and interpretation (Hymes 1972b:63-64) -- which might govern a speaker's behaviour in particular speech situations --, (3) "personal background knowledge" (Gumperz 1977 :191) and other similar factors, which have been proposed in the literature. *Knowledge* itself, in this view, could be claimed to consist both of "facts" and of "rules" for employing those facts. Individual differences between speakers with regard to their performance in specific speech situations might be seen as resulting from certain differences in *knowledge* -- both with respect to "facts" and with respect to "rules". Cazden, discussing individual differences among children, noted that "if what the child says in a given situation is functionally inadequate, the cause may lie in a conflict between the requirements of the present and the residue of his past." (1967:145). Further she pointed out that "the child's perception of the function of speech in a given situation [is] affected both by aspects of that situation and by his individual history of being in speech situations, making responses and receiving reinforcements." (145). At the level of communicative perception, where I would claim that some "reading" of the speech situation takes place and is interpreted in terms of the speaker's experience and norms, differences in terms of strategies adopted thus would possibly result from individual differences in "experiences" and associated "norms of interaction and interpretation".

In general, a perceptive speaker, one who is attentive to the needs of an unknown (and possibly unknowledgeable) audience, might be expected always to choose an explicit communicative strategy. There are, however, more aspects to a speech situation than simply a speaker, audience, addressee, etc. In some cases it may be that one of these other aspects overrides that of participant; the needs of an "unknown other" may thus become of secondary or no importance. If we consider, for example, certain more or less immutable speech acts (such as, poems, riddles, some jokes, etc.), we must attribute their form not to the application of a communicative strategy by a speaker based upon perceived audience needs; rather, we have to attribute this invariant form to their status as *special* speech acts (*genres*), which have their own rules. To alter many such speech acts in order to satisfy audience needs might well destroy their integrity. The specific form (and, to some extent, content) of a stretch of speech may thus depend upon any one or a combination of several factors. This is probably true for all speakers.

5.3 Communicative Strategies

It is possible to point out several ways in which the communicative competence of adults and children typically differs with regard to the perceptions and strategies underlying speech acts and the forms those acts take. Cook-Gumperz, in the study alluded to above, discusses the relative importance of the *semantic-syntactic channel* and what might be termed a

paralinguistic-situational channel. She notes that adults tend to background the latter channel, while children rely on both channels to convey and interpret meaning (1977:104). She goes on to suggest:

that the possibility of *foregrounding* the semantic-syntactic channel, as the *dominant* and *socially* recognized carrier of meaning, is a particular skill which develops gradually after the initial acquisition of some semantic-syntactic competency. This sociolinguistic skill, to foreground a part of the meaning components of the message, involves the ability to state the purposes of the verbal activity itself . . . such that there will be a gradual dominance of the channel of *lexicalized intent* over other sources of interpretive information. (1977: 105)

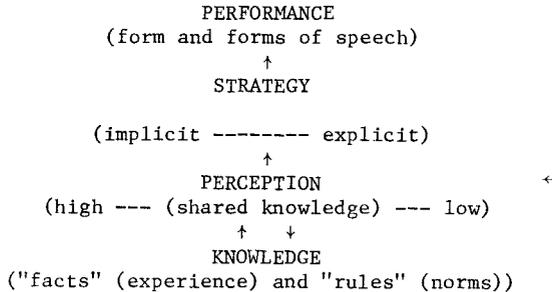
I would suggest that the narratives under discussion here afford examples both of the foregrounding of the semantic-syntactic and of the paralinguistic-situational channel. "The Cheetah", as demonstrated, is structured with a maximal foregrounding of the semantic-syntactic channel and is thus the product of an explicit communicative strategy. The games narratives, on the other hand, rely on situational reference, specialized vocabulary and, additionally, were uttered in a sort of sing-song voice which may characterize ritualized instruction-giving. They were the product of an implicit communicative strategy, not appropriate for adult speech.

The girls' reliance on a communicative strategy which does not maximize the semantic-syntactic channel and is, for an adult, not adequately communicative can be seen as owing to the fact that these speakers have not yet fully acquired adult-like communicative competence. The task they were given (namely, to relate the rules of certain games) required communicative skills they did not possess. They were asked to discuss (in an explicit way) topics which for them are normally embedded in a particular situation, involving knowledgeable (or potentially knowledgeable) participants and certain props (ropes, elastics, etc.). In selecting an implicit strategy to talk about these games, they failed to disembed the speech act from its usual situation. That talking about the games was not a particularly unnatural task for them is seen in the fact that their explanations were coherent (though not explicit) and that verbal activity did not diminish. They were not at a loss for words. In essence, exigencies imposed by the topic at hand overrode any consideration of individual audience need (even when this need was made explicit). Additionally, the somewhat ritualized character of the rules (similar to but not identical with that of a poem, song, etc.) -- especially of the rules for "Chinese skipping" -- may have contributed to this ignoring of the communicative needs of the audience. (Another factor which, in addition to topic, might be relevant here is the function of the speech act. "The Cheetah" could be seen as a manifestation of an "expressive" function; the games narratives might be categorized as "instrumental" or (with Halliday 1978) as "regulatory".)

6. Conclusion

In conclusion, I wish to return to some of my remarks above on the nature of communicative competence. Below I include a model of what I

understand by this term. With Hymes and many others I see performance as being an aspect of the larger entity -- communicative competence. The characteristics (or form) of a particular linguistic performance seem to me to presuppose some sort of underlying communicative strategy. I assume a continuum of strategies arrayed along a dimension of explicitness. I see the level of strategy as underlain by communicative perception. Communicative perceptions are readings of the speech situation in the light of the experience and norms (or knowledge) of the speaker. I array them here along a dimension of "shared knowledge", though this label may not be entirely satisfactory. Communicative knowledge, as mentioned above, may contain both "facts" and "rules". Both of these aspects might be expected to differ from speaker to speaker, especially from child speaker to adult speaker. One of the differences in this area would surround the relative appropriateness of Cook-Gumperz's semantic-syntactic and paralinguistic-situational channels. The rules for the use of these modes of encoding meaning could be expected to vary considerably between such speakers. One of the most significant aspects of the assimilation of children to the (sociolinguistic) culture of adults might thus consist in their acquisition of rules regarding the appropriateness of the two channels and of explicit and implicit communicative strategies.



- Examples: (1) Implicit strategy (based on assumption of high degree of shared knowledge and exhibiting exophoric reference): She stands there.
(2) Explicit strategy (low shared knowledge and endophoric reference): The teacher stands between the two teams.

Some Aspects of Communicative Competence

Appendix A

An extended narrative: "The Cheetah"

O [my dad he works at Spot Cash Income Tax, where you cash your T-4 slips in, and so one day he was at work and -- he a -- there's this other guy, Todd, he works with him in the same office and he asked Todd to come over and eat with us on Sunday, so he did. And then he, like, he told us about his future life when he lived out in Bowness and, no it wasn't Bowness, in B.C. And then he told us that]

A [one day he was workin' on this playhouse for his two girls and then so he was workin' on it and they had, they were look-]

O [he just came back from a sailing trip 'cause he was a sailor then and he was lookin' after his buddy's -- I forget what kind -- it's related to a cheetah -- they're great big things like this and they're as playful as a kitten, a cat, and they're as playful as a kitten . . . And then one day -- they live right next door to some people that had a great big tomcat and the tomcat it got out of the window and that tomcat it always beated up on the kids]

A [and so one day it got scratching the kids and that other cat he was looking after it got out there and tore the tomcat apart and then so the kids went in there and said: /Dad can we keep that animal?/ and they said, and he said: "No!" and "I'm just lookin' after it." And he said: "Why you guys so excited about it now? Before you hated it." And then he said: /'Cause he just killed that tomcat next door./ And then he looked out the window and said: "Where's the mess it left?" And then the oldest girl said: "I cleaned it up." And then they said: "Then where's the skin of the cat?"

R [And they said: "We buried it right away so the neighbours wouldn't know that c [he killed the cat!"]]

Narrative Components:

O = orientation
A = complicating action
R = result or resolution
C = coda.

(In the narrative // = falsetto and underlining = increased emphasis and speed)

Appendix B

The minimal narratives:

(1) Normal skipping:

Student: Like for normal skipping, you get a skipping rope and you get two turners and they turn the rope and you jump it.

(2) Double dutch:

Interviewer: That's normal skipping. What other kind of skipping do you have?

Student: Oh, I know -- there's blue bell, cockleshell, . . . , double dutch . . .

Interviewer: What is double dutch?

Student: Double dutch -- you get two turners and they each have two ends of the rope. Like one person gets both ends . . . and the other person gets the middle of the rope and they turn like this or else for "dolly" you can go like this and then you double dutch!

(3) Chinese skipping:

Interviewer: Somebody told me about Chinese skipping. How do you do that?

Student: You get a bunch of elastics and you put them together and . . . You can use 500 and a 1000 or any 'mount.

Interviewer: So what happens when you do uh . . . ?

Student: You just put 'em on the ankles then the knees then the waist then the hips then the underwaist then waist and underarms and you just jump over it . . . but when you get to headsies you just use pinkies. I can jump up to pinkies to get over high skies.

Interviewer: It's still hard to figure out how you would do that . . .

Another student: You step inside of it and then you spread your legs around 'bout that much and then 1 2 3 4 then in and out and then you get it up to the knees and then you do the same and then to the waists and -- no -- underbums -- then you get underbums and then you get waists and you get underarms and then you get necks, and then ears, then heads, then high skies.

References

- Bernstein, Basil. 1971. *Class, Codes and Control*. Vol. I. London: Routledge & Kegan Paul.
- Cazden, Courtney. 1967. On individual differences in language competence and performance. *Journal of Special Education* 1:135-150.
- Cook-Gumperz, Jenny. 1977. Situated instructions: language socialization of school-age children. In Ervin-Tripp and Mitchell-Kernan, pp. 103-121.
- Ervin-Tripp, Susan and Claudia Mitchell-Kernan, (eds.). 1977. *Child Discourse*. New York: Academic Press.
- Gumperz, John J. 1977. Sociocultural knowledge in conversational inference. *Linguistics and Anthropology*, edited by Muriel Saville-Troike. Washington: Georgetown University Press. Pp. 191-211.
- Halliday, M. A. K. 1978. *Language as Social Semiotic*. London: Arnold.
- Hymes, Dell. 1972a. On communicative competence. In *Sociolinguistics*, edited by J. B. Pride and J. Holmes. Harmondsworth: Penguin. Pp. 269-293.
- _____. 1972b. Models of the interaction of language and social life. *Directions in Sociolinguistics*, edited by J. J. Gumperz and D. Hymes. New York: Holt, Rinehart and Winston. Pp. 35-71.
- Kernan, Keith. 1977. Semantic and expressive elaboration in Children's narratives. In Ervin-Tripp and Mitchell-Kernan, pp. 91-102.
- Labov, W. 1972. *Language in the Inner City*. Philadelphia: University of Pennsylvania Press.
- Mackay, Robert W. 1974. Conceptions of children and models of socialization. *Ethnomethodology*, edited by Roy Turner. Harmondsworth: Penguin. Pp. 180-193.

Classifiers and Subject Prefix Alternation in Athapaskan

Dave Henry

1. Introduction

1.1 The Verb Complex

The basic sentence structure in Athapaskan is subject-object-verb, as illustrated in Hare.¹

1. dene tu hedon
man water drinks 'The man is drinking water.'

The verb is inflected for aspect and subject agreement. If the object of a transitive verb is not stated as an independent NP and the subject is third person, the verb is also inflected for object agreement.

2. dene yedon < ye₆ don
man it drinks 'The man is drinking it.'

Because the subject is third person the object is expressed by the 'obviative' or 'fourth person'.²

The verb has three major parts: a) the stem, which combines with b) derivational prefixes to form a base with lexical meaning and c) inflectional prefixes for person and aspect. Each prefix occupies a specific position in the verb complex as illustrated for Hare in Table I. The relationship of the prefixes for Hare is illustrated in Table II (after Cook 1974:33). Table III sets out the verb prefixes in Hare. The adverbial lists are incomplete.

Table I: Internal structure of the Hare verb

Position	The verbal base		Paradigmatic prefixes
	Theme	Adverbial prefixes	
DISJUNCT 9.	Thematic	Adverb	Iterative
8.			
CONJUNCT 7.	Classifier	Distributive	Object Deictic subject Mode Aspect Subject
6.			
5.			
4.			
3.			
2.			
1.			
0.			

Table II: Basic morphological structure of the Hare verb

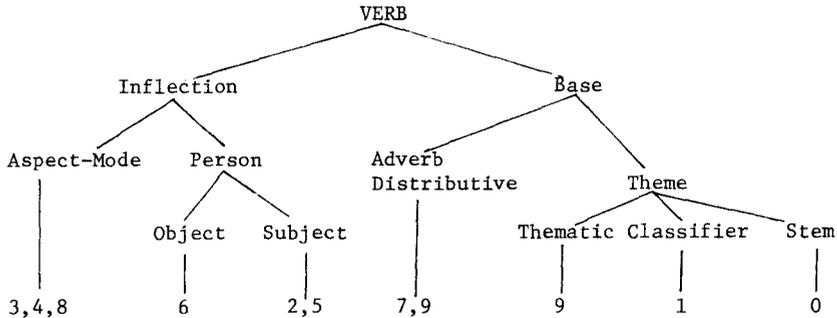


Table III: Verb Complex Prefixes in Hare (from Rice 1977:96a) (see below)

1.2 Prefix variation

Many of the prefixes undergo assimilation and alternation according to specific phonological rules. There are, however, allomorphs of some prefixes which must be explained on morphosyntactic grounds. Most notable are the subject prefixes which seem to be constrained by both phonological and syntactic conditions. The subject prefixes are examined in section 3 and the factors influencing their behaviour in section 4. In section 5 I will summarize these factors and propose several historical motivations which may be opaque synchronically and psychologically.

2. Subject prefixes

2.1 Subject prefix position

Subject prefixes are found in two positions. The deitic subject is found (depending on the language) in position 4 to 10 before the verb stem. The position for first and second persons is invariably position 2, preceding the classifier.

Table IV sets out the subject prefixes for a number of Athapaskan languages, for reconstructed Proto-Athapaskan, and for several related languages in the Na-Dene phylum. It can be seen from Table IV that the subject prefixes are remarkably similar throughout the languages despite geographical distances and historical time depth. This feature of Athapaskan makes it possible to analyze one language and anticipate a similar solution for each of the others in the family. Conversely, a family universal may be expected to apply in a hitherto unanalyzed member language.

In the Northern Athapaskan group Hare seems to have the most variety in its subject prefixes. A close examination of the factors which determine these variations will illustrate several Athapaskan characteristics.

Table III: Verb Complex prefixes in Hare (from Rice 1977:96a)

Prefix position:										
9	8	7	#	6	5	4	3	2	1	0
Adverbial	Iterative	Distributive		Direct object	Subject	Adverbial	Mode	Subject	Classifier	Stem
rá-	ra-	yá-		se-	ke-	de-	imp. ∅	1sg.h-	∅	
'óné-				ne-	ts'e-	she-	ne-	i-	H	
ts'e-				ye-	go-	ne-	pf.ye-	∅	D	
ri-				raxe-		.	we-	2sg.ne-	L	
.				ku-		.	ne-	n-		
.				'e-			fut.wo-	3sg.∅		
				de-			prog.ye-	n-		
				go-				1pl.íd-		
				le-				2pl.ah-		

Table IV: Subject prefixes in Athapaskan and related languages³

	<u>1 sg.</u>	<u>2 sg.</u>	<u>3 sg.</u>	<u>1 pl.</u>	<u>2 pl.</u>	<u>3 pl.</u>
<u>Northern</u>						
Babine	s, k	n	∅	ded	x ^w	he ₈
Carrier	es	in	∅	íd	ah	hu ₈
Chilcotin	s, i	in, n	∅, n	íd	ah.h	dže ₅
Dogrib	h	ne	∅	wi	ah	gé ₅
Hare	h, i, ∅	n, ne	∅, n	id, ts'e ₅	ah	ke ₅
Kutchin	š, i	né	∅	dixón(?)	naxón(?)	--
Sarcee	s	ni, v̄	∅	aad	as	gi ₇
Tanaina	eš	n, i	∅	tš'e ₁₀	eh	qe ₁₀ , k'e ₁₀
<u>Southern</u>						
Navajo	š, é	nì, v̄	∅	iid	oh, o	da ₈
<u>Pacific Coast</u>						
Hupa	w, e, y	n, y, ∅	∅	di, y	oh	yi, tš'ig
Tututni	š, ?es,	i	?e	id, ?id	o?, ?	xe ₅ , ya ₅
<u>Athapaskan-Eyak</u>						
Eyak	x̣	i, ∅	∅	da'	la _{x̣}	∅
<u>Na-Dene</u>						
Tlingit	x̣	i	∅	tu	--	--
<u>Proto-Athapaskan</u>						
(reconstructed)						
	*š	*nə	*∅	*də	*α-xK	*xə

3. Subject prefixes in Hare

The subject prefixes for Hare are set out below.

Table V: Subject prefixes in Hare

	1st person	2nd person	3rd person
singular	h, i, ∅	n, ne	∅, n
dual-plural	íd, ts'e ₅	ah	ke ₅

3.1.1 First person singular

The first person prefixes are h, i, ϕ. h is the Hare reflex of PA š whereas i < ə. The conditions which determine the surface form are complex. The underlying form may be considered to be h (ex.3) which becomes i in the perfective⁴ with a ϕ or H₁ classifier (cf. sec. 4.4).

3. ráhze < rá₄ h₂ ϕ₁ ze 'I hunt.'

4. wida < we₃ h₂ ϕ₁ da 'I sat down.'

The we perfective and h reduce to ϕ when preceded by a conjunct prefix⁵ and followed by ϕ, H₁.

5. demi < de₄ we₃ h₂ mi 'I started to swim.'

These may be written as rules R1. R2.

R1. we₃pf h₂ ---> ϕ / # CV $\left\{ \begin{array}{c} \phi \\ H_1 \end{array} \right\}$

R2a. h₂ ---> i / Ce₃pf $\left\{ \begin{array}{c} \phi \\ H_1 \end{array} \right\}$

b. e ---> ϕ / ___ i

A phonotactic requirement demands that h change to heh after a disjunct boundary.

6. hehjen < h₂ jen 'I sing'

This is expressed by rule R3.

R3. ϕ ---> he / # ___ h₂

R3 is obviously very ad hoc and will be revised below in section 4.2.

The above is only a descriptive analysis of the prefix alternation. The underlying motivation is more complex and its analysis will not be discussed until the variations and their factors in the other subject prefixes have been examined.

3.1.2 Second person singular

Second person in Hare is n₂ (< PA *nə which is realized as nasalization of the preceding vowel (ex.7). If the preceding vowel is e the vowel is raised to i (ex.8) except in the we₃ perfective preceded by another conjunct prefix, and followed by ϕ, H₁.

7. shéwontin < shé₄ wo₃ n₂ tin 'You will eat.'

8. dinjen < de₄ n₂ jen 'You start to sing.'

9. denjen < de₄ we₃ n₂ jen 'You started to sing.'

n₂ becomes ne in the perfective with ϕ , H₁ (ex. 10, 11) or following a disjunct boundary.

10. yene'a < ye₃ n₂ ϕ_1 'a 'You ate.'

11. weneda < we₃ n₂ ϕ_1 da 'You sit down.'

12. ránegwe < rá₉ # n₂ gwe 'You live, stay.'

These rules can be written as R4-R7.

R4. we₃pf ----> ϕ / # CV ___ n₂ $\left\{ \begin{array}{l} \phi \\ H_1 \end{array} \right\}$

R5. n₂ ----> ne / Ce₃pf ___ $\left\{ \begin{array}{l} \phi \\ H_1 \end{array} \right\}$

R6. n₂ ----> ne / # ___

R7. e ----> i / ___ n[(Condition: R4 has not applied.)

([represents classifier + stem)

3.1.3 Third person singular

The third person singular is unmarked (ϕ) (ex.12) except in the ye, ne perfectives with ϕ , H₁ where it is realized as nasalization of the preceding vowel which, if e, is raised to i.

12. ráweya < rá₉ # we₃ ϕ_2 ya 'He went.'

13. ráwoya < rá₉ # wo₃ ϕ_2 ya 'He will go.'

14. yin'a > ye₃pf ϕ_2 'a 'He ate.'

The we perfective and ϕ_2 combine to raise the tone on a preceding conjunct prefix when followed by ϕ , H₁.

15. déya < de₄ we₃ ϕ_2 ya 'He started.'

After a disjunct boundary an epenthetic 'peg' he is inserted, if there is no conjunct prefix.

16. hejen < # ϕ_2 jen 'He sings.'

These are written as rules R8 through R11.

R8. v we₃pf ϕ_2 ----> v / # C ___ $\left\{ \begin{array}{l} \phi \\ H_1 \end{array} \right\}$

R9. ϕ_2 ---> n / $\left\{ \begin{array}{l} \text{ye} \\ \text{ne}_{3\text{pf}} \end{array} \right\}$ — $\left\{ \begin{array}{l} \phi \\ \text{H}_1 \end{array} \right\}$

R10. e ---> i / ___ n [

R11. ϕ ---> he / # ___ ϕ_2

Note that R10 = R7.

3.2.1 First person dual-plural

In Hare the dual and plural are only differentiated by verb stem alternation. Henceforth they will be called simply 'plural'.

The first person plural is íd < PA *de

17. hidze < íd₂ ze 'We shout.'

íd combines with the following classifier or stem consonant to produce the 'D-effect' (cf. sec. 4.3).

18. he'a < ϕ_2 'a 'He eats.'

19. hít'a < íd₂'a 'We are eating.'

íd₂ has a prefixed h when preceded by a disjunct boundary.

20. hidon < id₂ don 'We drink.'

R12. ϕ ---> h / # ___ íd₂

In some other Athapaskan languages íd causes the tone of the stem vowel to raise. One example is Chilcotin.

21. ní'íil < ne₃ íd₂ l₁ 'íil 'We have swum.'

22. nēt'íil < ne₃ ah₂ l₁ 'íil 'You (pl) have swum.'

In Hare, ts'e₅ 'someone' is sometimes used for polite 1 pl., similar to French on 'On'y va?' 'Let's go.'

23. ts'e'a < ts'e₅ 'a 'Let's eat.'

3.2.2 Second person plural

The second plural is ah₂. When followed by ϕ , H₁ and a voiced fricative stem initial, the fricative is devoiced.

24. rínighe < rí₉ # ne₃ n₂ ghe 'You sg. carry it.'

25. rírahxe < rí₉ # ne₃ ah₂ ghe 'You pl. carry it.'

R13. $\left[\begin{array}{l} +\text{voice} \\ +\text{fricative} \end{array} \right]$ stem initial ---> [-voice] / ah₂ $\left\{ \begin{array}{l} \emptyset \\ H_1 \end{array} \right\}$ —

After a disjunct boundary ah₂ is preceded by epenthetic h.

26. hahdon < # ah₂ don 'You pl. drink.'

R14. \emptyset ---> h / # ___ ah₂

3.2.3 Third person plural

The third person pluralizer prefix is ke₅ with \emptyset ₂.

27. keyin'a < ke₅ ye₃ \emptyset ₂ \emptyset ₁ 'a 'They ate.'

3.3 Stem alternation

Some verbs in Hare, as in other Athapaskan languages, employ verb stem alternation for subject number: singular-dual vs plural; singular vs dual-plural; singular vs dual vs plural. ke₅ employs the appropriate dual or plural stem, as do íd₂ and ah₂.

28. shéhtin < shé # h₂ tin 'I eat.'

29. shéhítin < shé # íd₂ tin 'We du. eat.'

30. shéhiye < shé # íd₂ ye 'We pl. eat.'

31. shotin < shu # \emptyset ₂ tin 'He sleeps.'

32. shukinya < shu # ke₅ ye₃ \emptyset ₂ ya 'They sleep.'

33. wida < we₃ h₂ da 'I sit.'

34. wíke < we₃ íd₂ ke 'We du. sit.'

35. dawíw'i < da₄ we₃ íd₂ w'i 'We pl. sit.'

4. Variation factors

As was seen in section 3 a number of factors influence the final forms of the pronoun prefixes. In this section we will examine each of these factors separately. The factors are of two types, phonological and syntactic. Cook (1971c) discusses several examples of phonological constraints on syntactic rules. We have seen that syntactic or morphological rules also constrain some phonological processes. There is a close relationship between these two rule types in Athapaskan and a rule of one

class will frequently feed or bleed a rule of the other class. Because the two rule types are interspersed in this manner it makes it difficult to write formal rules based strictly on phonological features or syntactic elements.⁶ Because of the lack of adequate formal analyses for most Athapaskan languages, no attempt is made here to express rules strictly in formal terms.

4.1. Assimilation

Athapaskan phonology is rife with assimilation rules and we will only point out a few which are relevant. The reflexes of the subject prefixes combine with the following classifiers and stem initials and with preceding prefixes to produce an array of surface forms which are not always readily identifiable with the underlying elements. One of the factors which constrains assimilation is the disjunct boundary. Classifiers also influence assimilation. One particular assimilation rule is the D-effect Rule. Adjacent segments of similar phonological features frequently coalesce. Some morphemes such as we₂ perfective seem very susceptible to assimilation or deletion. In the following sections we will consider some of these factors in more depth.

4.2 Disjunct boundary

The concept of the disjunct boundary goes back at least as far as Li (1932) and has been extensively discussed in Kari (1975). In essence, there is a point in the prefix positions (indicated here by #) which prevents certain rules from operating. Naturally if no prefix at all occurs left of the boundary the stronger word boundary (#) is in effect and subsumes all the # restrictions. This boundary has no phonetic reality except as a morphological trigger for phonological rule feeding or bleeding.

In Hare this disjunct boundary affects 1sg.h₂, 3sg.ø₂, 1pl.id₂ and 2pl.ah₂, none of which are of the canonical form CV. In this environment an epenthetic h(e) is introduced to produce a CV conjunct prefix. This type of 'peg' is widely used in Athapaskan. R3, 11, 12, and 14 may now be written as R 15, R 16.

$$\begin{array}{l}
 \text{R15. } \emptyset \text{ ---> } \text{he} / \# \text{ --- } \left. \begin{array}{c} \text{h} \\ \text{v} \\ \emptyset_2 \end{array} \right\} \\
 \text{R16. } \text{e} \text{ ---> } \emptyset \text{ --- } \left. \begin{array}{c} \text{i} \\ \text{a} \end{array} \right\}
 \end{array}$$

Notice that this phonotactic rule R16 also subsumes R2b.

4.3 D-effect

Another phonological rule is the D-effect rule (DER) (Howren 1971) The DER causes changes in the stem initial segment when the classifier is D and these lead to further changes in the prefixes, particularly 1sg. These changes are phonologically predictable. Similar changes result from /d/ of 1pl. id₂.

A historical question is whether the rule was originally restricted to one of these morphological environments (D classifier or lpl. \underline{fd}_2) and extended by phonological analogy to the other instance, or whether it was originally phonological. Work on Chilcotin presently being conducted by Cook, deWaard and Henry at The University of Calgary may lead to clarification of this issue, but at this time no conclusions can be drawn.

4.4 Classifiers

Athapaskan languages all have a prefix morpheme called the classifier which appears in position 1, immediately before the verb stem. The function of the classifier is not clear, though frequently classifier alternation is associated with an active-passive shift. The classifiers are represented by PA * ϕ , \underline{b} , L, D. The Hare reflex of \underline{b} is H. In his 1969 monograph on the classifiers Krauss proposed that the classifiers each contain three components which can be traced back to Proto-Athapaskan-Eyak and even to Na-Dene, the parent of PAE and Tlingit, a non-Athapaskan language. The reconstructions of the classifier components are set out in Table VI (after Krauss 1969:54).⁷ (Minus elements (-) are null.)

Table VI: Classifier component reconstruction

Na-Dene	PAE	PA	Hare
ϕ -d $\underline{+y}$	* ϕ	* ϕ	ϕ
$\underline{\pm}$ -d $\underline{+y}$	* $\underline{\pm}$	* \underline{b}	H
ϕ +d $\underline{+y}$	* \underline{d}	* \underline{D}	D
$\underline{\pm}$ +d $\underline{+y}$	* $\underline{\pm}$	* \underline{L}	L

This analysis of the classifiers enables us to see ϕ , H_1 contrast with D, L_1 in Hare in the phenomenon of pronoun alternation in the perfective. ϕ , H have $\underline{-d}$ in common where D, L have $\underline{+d}$. This \underline{d} -component also seems to have the effect of voicing or devoicing preceding elements. One question which arises is whether lpl.PA* \underline{de} is from the same source since the DER applies in both conditions (see also Krauss 1969:67).

The \underline{d} -component seems to block subject prefix alternation in the perfective. If this is in fact the case, rules R2, 4, 5, 8, 9, 13 can be written such that [0, H_1] classifiers are replaced by [$\underline{-d}$ classifier] or more basically [-voice classifier]. Why this [-voice] element should initiate a prefix alternation is not yet clear.

Kari (1976:218) notes that the $\underline{+y}$ element in the classifier moves leftward past the $\underline{\pm}$ element when the \underline{d} component is null. He also analyses the Navajo perfective as having a '+it+' aspect prefix and suggests that this may be a reflex of the \underline{y} component of the classifier which has moved leftward past the subject position but which still initiates subject prefix alternations. This analysis, if correct, explains why in Hare the alternations only occur a) in the perfective and b) with ϕ , H classifiers.

Rules R2a, 5, 9 might then be written so that the environment is simply

[_{aspect}ⁱ].

However this would restrict all perfectives to ϕ , H classifiers even though such is not the case. An alternate source for perfectives with [+voice] classifiers would then have to be proposed. Synchronically, the y and d components are too abstract to be useful, although historically this analysis would seem valid. As will be seen below, the concept of the classifier components provides a diachronic explanation for alternations constrained by some of the aspect prefixes.

4.5 Perfective aspect

It is not clear whether the perfective prefix is exclusively modal or aspectual or a combination. Cook (1974) considers the perfective to be purely aspectual while Kari (1976) analyzes the perfective as a combination of one of three mode prefixes with a +it perfective aspect. Rice (1977) has labelled the perfective as 'mode'.

The origins of the perfective prefixes are not well established. The ne₃ and ye₃ prefixes are considered to be derived from *nən terminative aspect and *y^wən progressive (Krauss 1969:81-82, Hoiyer 1971:138-140). These two prefixes are quite regular in their use. They contrast with we₃ which is derived from PA *sə. In Eyak this prefix follows the subject pronoun and in Tlingit it appears in the classifier (Krauss 1969:24). In addition, it seems that in Navajo at least, only si perfective (*sə) can occur with a derivational prefix in conjunct position (Kari 1976:220). The ye and ne perfectives are restricted to co-occurrence with disjunct prefixes.

The analysis of we₃ as we plus y component moved leftward can explain several variations. y in any position is considered to reinforce we. If y moves to classifier initial position, it is absorbed by the subject prefix. I will refer to these processes as Y-movement (R17) and Y-absorption (R18).

R17. +i -d +y ---> y +i -d

R18. a. h₂ +y ---> i
b. y ---> í/ ϕ ₂ ___
c. y ---> ϕ / ah₂ ___

By R18 then, 1sg. h₂ becomes i and 3sg. ϕ becomes í. DER blocks a change in 1pl. íd₂, and y is absorbed by 2pl. ah₂ by phonotactic rules.

These changes only occur with ϕ , H₁ (-voice) classifiers, which trigger Y-movement. we₃ then assimilates with a preceding conjunct prefix as described in section 3.

If the y component is not absorbed by the vowel of the subject prefix, it continues to reinforce we₃ which as a consequence is not absorbed either. Hence the apparently complicated changes in the subject prefixes

are shown to have relatively simple motivations. The lack of prefix variation (other than assimilation) in languages like Carrier may be due to levelling whereby the reflexes of *s, *ne have become the only forms available. Alternately, it may be that Y-Movement is no longer productive, that is, the y component does not move leftward and Y-absorption, which produces the prefix alternations, cannot therefore apply.

5. Summary

The motivations of the various alternations in the Athapaskan subject prefixes have long been problematic. The multiple rules in an Item and Process grammar (e.g., Rice 1977) can, with the help of comparative and diachronic data, be shown to involve a relatively limited number of factors. For instance, Rice (1977:72-73) explains some of the alternation for 2sg. n₂ in the following manner:

"The second person singular is marked by ne- ... [with] zero, h classifier, perfective word initial or after a disjunct morpheme... [F]ollowing a conjunct morpheme...the second person is marked by nasalization (but not raising)...[and] the morpheme we- is completely lost in the we- perfective in this position."

Do native speakers internalize this type of rule? The principle of economy suggests that underlying these surface forms are a few widely applying formal rules. We have seen how some of the rules I proposed initially were collapsed to bring out underlying similarities. Y-movement and Y-absorption generalized several of the factors constraining prefix alternation. With the addition of further phonological rules such as He-peg (R 15), the D-effect rule, and several phonotactic assimilation rules, the entire set of subject prefix alternations is accounted for.

This examination of a number of Athapaskan subject prefix series has shown that a limited number of formal rules have a wide range of application in each of the Athapaskan languages. Assimilation, disjunct boundary and D-effect are already known for their influence on the surface forms of the verb prefixes. It has been shown that the classifiers and perfective prefixes constrain subject prefix alternations based on an underlying reconstructed y component. This analysis seems to explain otherwise complex constructions in languages as widely separated as Hare and Navajo. Further examination of other Athapaskan languages will, it is hoped, present a fuller picture of the verb prefixes in the Athapaskan family.

Footnotes

¹Hare is spoken around Fort Good Hope, N.W.T. ' indicates high tone.

Hare citations are in an adapted orthography. sh = /š/, j = /dž/, gh = /ɣ/. Following Cook (1978) nasalized vowels are indicated as Vn, which has considerable justification in reconstructed underlying forms. Numerical subscripts indicate prefix position (cf. section 2.1). I would like to give special thanks to Ed Cook and Dave Pentland for their help and constructive comments in the development of this paper.

²For a discussion of object prefix agreement in Sarcee see Cook 1974.

³Prefixes are in position 2 unless otherwise noted by subscript. '--' indicates not available. v indicates tone raising on the preceding syllable. Sources: Babine: Story 1978. Carrier: CCDC 1974, Cook 1977, Story 1978. Chilcotin: Cook 1976a, 1976b, 1977, deWaard 1979, Krauss 1975. Chipewyan: Li 1932, 1946, Richardson 1963. Dogrib: Davidson 1963. Hare: Rice 1977. Kutchin: Scollon 1975 (Scollon's c = š). Sarcee: Cook 1971a, 1971b, 1972b, 1974, 1977. Tanaina: Kari 1975 (Kari's ch = tš), Navajo: Kari 1975, 1976, Young and Morgan 1942, Hoijer 1945, 1946, 1963, Sapir and Hoijer 1967. Hupa: Golla 1970. Tututni: Golla 1976. Eyak, Tlingit and Proto-Athapaskan: Krauss 1964, 1965, 1969, Pinnow 1970.

⁴In Athapaskan the perfective is marked by several methods: stem alternation, subject prefix alternation, and position 3 prefixes. It is proposed that e.g. ne₃ is somehow marked as either perfective or imperfective. In this paper when the distinction is required, a subscript CV₃pf is used. See also section 4.5.

⁵Following Kari (1975) I employ three boundaries in the verb complex: word initial and final, ##; disjunct-conjunct, #; morpheme, unmarked. See also section 4.2.

⁶Kari (1975) frequently has to express rules with reference to syntactic forms, e.g., p. 245: Ni-absorption CV + ni [---> CV.

⁷I fail to understand why Krauss did not reduce this further to:
tš td ty.

References

- IJAL *International Journal of American Linguistics*
UCPL *University of California Publications in Linguistics*
- CCDC 1974. Central Carrier Dictionary Committee. *Carrier Bilingual Dictionary*. Fort St. James.
- Cook, Eung-Do. 1971a. Morphophonemics of Two Sarcee Classifiers. *IJAL* 37.3:152-155.
- _____. 1971b. Vowels and Tones in Sarcee. *Language* 47.1:164-179.
- _____. 1971c. Phonological Constraint and Syntactic Rule. *Linguistic Inquiry* 3:465-478.
- _____. 1972a. Stress and Related Rules in Tahltan. *IJAL* 38.4:231-233.
- _____. 1972b. *Sarcee Verb Paradigms*. Mercury Series, Ethnology Division, Department of Indian and Northern Affairs. Ottawa.
- _____. 1974. *Sarcee Grammar*. MS The University of Calgary.
- _____. 1976a. *Chilcotin Phonology*. MS The University of Calgary.
- _____. 1976b. Flattening and Rounding in Chilcotin Velars. *Victoria Conference on Northwestern Languages*, Barbara Efrat, editor. British Columbia Provincial Museum: Heritage Record No. 4 (1979).
- _____. 1977. Syllable Weight in Northern Athapaskan. *IJAL* 43.4:259-268.
- _____. 1978. Nasalized Vowels in Slavey (and Dogrib). MS The University of Calgary.
- Davidson, William. 1963. A Preliminary Analysis of Active Verbs in Dogrib. *UCPL* 29:48-55.
- Golla, Victor. 1970. *Hupa Grammar*, PhD dissertation. University of California at Berkeley.
- _____. 1976. Tututni (Oregon Athapaskan). *IJAL* 42:217-227.
- _____. 1976. Tagish field notes. (xerox)
- Hoijer, Harry. 1945. The Apachean Verb, Part I: Verb Structure and Pronominal Prefixes. *IJAL* 11.4:193-203.
- _____. 1946. The Apachean Verb, Part II: The Classifiers. *IJAL* 12.2: 51-59.
- _____. 1963. The Athapaskan Languages. *UCPL* 29:1-29.

- Hoijer, Harry. 1971. Athapaskan Morphology. *UCPL* 65:113-148.
- Howren, Robert. A Formalization of the Athabaskan D-Effect. *IJAL* 37: 96-113.
- Kari, James. 1975. The Disjunct Boundary in the Navajo and Tanaina Verb Prefix Complexes. *IJAL* 41.4:330-345.
- _____. 1976. *Navajo Verb Prefix Phonology*, PhD dissertation. University of New Mexico, 1973. New York and London: Garland
- Krauss, Michael. 1964. Proto-Athapaskan-Eyak and the Problem of Na-dene: The Phonology. *IJAL* 30.2:118-131.
- _____. 1965. Proto-Athapaskan-Eyak and the Problem of Na-dene: Morphology. *IJAL* 31.1:18-28.
- _____. 1969. On the Classifiers in the Athapaskan, Eyak, and the Tlingit Verb. *IJAL* memoir 24.
- _____. 1972. Na-Dene. *Current Trends in Linguistics* 10.
- _____. 1975. Chilcotin Phonology: A Descriptive and Historical Report with Recommendations for a Chilcotin Orthography. MS University of Alaska.
- Li, Fang-Kuei. 1932. A List of Chipewyan Stems. *IJAL* 7:122-151.
- _____. 1946. Chipewyan. In *Linguistic Structures of Native America*. Viking Fund Publications in Anthropology 6:398-423.
- Pinnow, 1970. Notes on the Classifiers in the Na-Dene Languages. *IJAL* 36.1:63-67.
- Rice, Keren. 1977. *A Preliminary Grammar of Fort Good Hope Slave (Hare)*. Department of Indian and Northern Affairs. Ottawa.
- Richardson, Murray. 1963. Paradigmatic Prefixes in Chipewyan. *UCPL* 29: 42-47.
- Sapir, Edward and Harry Hoijer. 1967. The Phonology and Morphology of the Navajo Language. *UCPL* 50.
- Scollon, Ronald. 1975. A Sketch of Kutchin Phonology. *University of Hawaii Working Papers in Linguistics* 7.3:17-88.
- Story, Gillian. 1978. Carrier-Babine Phonology. MS Summer Institute of Linguistics.

deWaard, Aldert Reyner. 1979. A Study of Chilcotin Verb Morphology.
MA thesis. The University of Calgary.

Young, Robert and William Morgan. 1943. *The Navaho Language*. Education
Division, United States Indian Service. Phoenix, Arizona.

That's Something That I Wouldn't Want to Have to Account For,
Is a Sentence Like This One.*

Richard Douglas Jehn

1. Introduction

The grammar of focus phenomena in English has come under intensive investigation in recent years and this research has provided much in the way of explanation for structures which had previously been little understood, e.g. cleft constructions, topicalization, etc. There is, however, at least one type of focus construction which seems to pattern like pseudo-cleft sentences, but which has been neglected in the literature. This paper outlines the most apparent aspects of the syntactic and semantic behaviour of the construction in question and presents a tentative proposal for its incorporation into the grammar of English following the framework of the revised extended standard theory (Chomsky 1975, 1977a; Chomsky and Lasnik 1977).

2. Th-Cleft and Its Similarities to Wh-Cleft

This portion of the paper presents the general syntactic behaviour of the construction in question. Some semantic distinctions which are reflected by overt syntactic markers are presented and tentative interpretations of the phenomena are offered.

In example (1) below, I present a declarative sentence as (1a), the pseudo-cleft sentence, which may (or may not) be derived from (1a),¹ as (1b), and the construction under investigation here, which I will term "th-cleft", as (1c):

- (1) a. I won't go to the bar alone.
b. What I won't do is go to the bar alone.
c. That's what I won't do, is go to the bar alone.²

Although the surface structures of (1b) and (1c) are clearly related, establishing the deep structure relationship is problematic. I will return to this issue in Section 4 after presenting some general characteristics of the th-cleft construction.

A highly unusual feature of th-cleft constructions is that the wh-clause is shared over two Ss; that is, the embedded sentence in (1c) behaves as if it were both predicate NP of that is and subject of the second copula. Consider sentences (2) and (3):

- (2) a. [That]'s [what I never would have believed], is [that the earth is round.]
b. [That]'s [what I never would have believed] (cf. I never would have believed that.)
c. [What I never would have believed] is [that the earth is round.] (cf. I never would have believed that the earth is round.)

- (3) a. [That]'s [what I won't do], is [go to the bar alone.]
b. [That]'s [what I won't do.] (cf. I won't do that.)
c. [What I won't do] is [go to the bar alone.] (cf. I won't go to the bar alone.)

The (b) and (c) sentences above parallel the sentences in parentheses, but there are no corresponding sentences for the (a) examples.³ The fact that only one copula appears in the (b) and (c) sentences while two appear in the (a) sentences suggests why many speakers find them ungrammatical. Many more speakers find the construction acceptable with a pause instead of a copula preceding the focus constituent:⁴

- (4) That's what I never would have believed -- that the earth is round.
(5) That's what I won't do -- go to the bar alone.

Sentences (4) and (5) suggest that the second copula is spurious. More convincing evidence for the spuriousness of this copula is evinced by the application of question formation to the sentences. Consider sentences (6) and (7):

- (6) Is that what he never would have believed, is that the earth is round?
(7) *Is that's what he never would have believed that the earth is round?

Although the main verb directly precedes the focus constituent in wh-cleft (and it-cleft) sentences, the examples above clearly show that this is not the case with th-clefts. If the second copula (i.e. the copula directly preceding the focus constituent) is taken as main verb and question formation is applied, the ungrammatical sentence (7) is produced. Thus we see that the shared clause in th-cleft sentences and the presence of the spurious copula yield the unusual non-canonical surface structures exhibited.

Indefinite pronouns may precede the COMP-node in th-cleft sentences. That is, the surface structure complement NP in th-clefts is rewritten as either NP or as NP - \bar{S} . Examples (8) and (9) clarify this statement:

- (8) a. That's [_{NP}[\bar{S} what I never would have believed]] is that the earth is round.
b. That's [_{NP}[_{NP} something] [\bar{S} (that) I never would have believed]] is that the earth is round.
(9) a. That's [_{NP}[\bar{S} what I hate]] is wet hair.⁵
b. That's [_{NP}[_{NP} something] [\bar{S} (that) I hate]] is wet hair.

Lexical NPs, either definite or indefinite, may occur as the head of the complement as well, evoking the same rewrite rules as (8b) and (9b) above demonstrate.

- (10) That's a fact (that) I never would have believed, is that the earth is round.
- (11) That's a woman (that) I'd like to get to know, is Raquel Welch.
- (12) That's the one book (that) I would never read, is Aspects of the Theory of Syntax.
- (13) That's the German strategy (that) I never understood, was their invasion of Russia.

Akmajian (1970b:18 and 83n.) notes that pseudo-cleft sentences that begin with who are often less acceptable than those that begin with other wh-words. Consider sentences (14a) to (14f) (Akmajian's (2a) to (2f)).

- (14) a. Who Nixon chose was Agnew.
- b. What Herman bought was that tarantula.
- c. Where he finally ended up was in Berkeley.
- d. When John arrived was at five o'clock.
- e. Why Fillmore sent Perry was to exploit the Japanese.
- f. How he did that was by using a decoder.

Interestingly, (14a) seems more acceptable in a th-cleft construction and all the sentences in (14) are certainly possible as th-clefts. That (15a) is better may be explained by the fact that the wh-clause appears in a complement position, however.

- (15) a. That's who Nixon chose, was Agnew.
- b. That's what Herman bought, was that tarantula.
- c. That's where he finally ended up, was in Berkeley.
- d. That's when John arrived, was at five o'clock.
- e. That's why Fillmore sent Perry, was to exploit the Japanese.
- f. That's how he did that, was by using a decoder.

Furthermore, this, these and those may appear instead of that in certain contexts, although grammaticality judgments are ambivalent and my intuitions may be arguable. Consider sentences (16) and (17):

- (16) a. This is what I hate to do, is my laundry.
- b. These are things (that) I absolutely despise, are washing the dishes and doing the laundry.
- (17) a. That's what I hate to do, is my laundry.
- b. Those are things (that) I absolutely despise, are washing the dishes and doing the laundry.

I would suggest that the differences in meanings between (16) and (17) reflect variations in the immediacy of the situation. That is, in (16) the speaker is about to perform the chores and is expressing displeasure, while in (17) the statements are more general and need not occur within the context of the performance of these tasks. In other words, this and these are more restricted in occurrence, being directly dependent upon the context surrounding their utterance.

The factors which influence the tense of the copula also need mention. The phenomena exhibited in the examples are far from being clear at this

point. Consider:

- (18) a. That's a cigarette (that) I used to hate, is Export A.
b. That's a cigarette (that) I used to hate, was Export A.
(19) a. That's a road (that) I used to hate to drive on, is
Crowchild Trail.
b. That's a road (that) I used to hate to drive on, was
Crowchild Trail.

The differences in interpretation are quite subtle. It seems to me that the (b) sentences above suggest that the item referred to by the focus constituent is no longer immediately present. That is, (18b) implies that Export A is no longer manufactured, while (18a) does not. Similarly, (19b) implies that the speaker no longer resides in Calgary, while (19a) does not.

These subtle semantic distinctions both in the use of the demonstrative pronouns and in the tense of the second copula may lend support to the grammaticality judgments which have been offered.⁶ Th-cleft sentences seem to add semantic material which cannot be expressed with wh-cleft (or, for that matter, it-cleft) sentences alone. The additional semantic yield to the speaker through the use of th-clefts could account for their presence in the grammar as an innovative construction.

To sum up this section, the significant fact that th-cleft sentences appear at the surface (roughly) in the form

[_{S_i} Demonstrative Pronoun - be - [_{S_j}NP S_j] - be - NP S_j]

was demonstrated with the implication that this form accounts for the inherent strangeness and marginal acceptability of the construction. Moreover, evidence of the spurious nature of the second copula was presented. It was also shown that th-clefts may appear with any of the demonstrative pronouns in the subject NP position, depending upon the context of the situation. Finally, the problematic nature of the tense of the second copula was discussed.

3. Focus and Presupposition

Chomsky (1971) and Akmajian (1970a, b; 1973) both deal with the matter of sentence focus and presupposition in depth. In their terminology, the focus of a sentence is "a constituent of a sentence ... which contains the intonation center, i.e. the position of highest pitch and stress." (Akmajian 1970b:189-90) Akmajian goes on to add that focus refers both to emphatic stress in an utterance and to the normal peak stress point in an utterance. The presupposition of a sentence, on the other hand, is "a statement derived by replacing the focus of a sentence with an appropriate semantic variable." (*ibid.*, p. 190) Furthermore, Akmajian states that "the general interpretation of the notion 'focus' is that portion of a sentence which is 'new', informative, 'interesting', and semantically prominent with respect to the surrounding material." (*ibid.*, p. 192)

It seems that there are two basic intonation and stress patterns associated with th-cleft sentences, both of which can be considered marked patterns in the sense that in neither instance does the sentence follow the normal rules of stress assignment in English. Given that we are dealing with a focus construction here, this markedness is not unexpected.

Returning to a comparison of pseudo-cleft and th-cleft constructions, the two patterns are of some interest. In the first instance, the pseudo-cleft and the th-cleft intonation contours are almost identical. The only difference is that the th-cleft sentence has a short segment at the head of the first breath group. Consider sentences (20) and (21):

- (20) a. What I won't² do is go to the bar¹ alone.
b. That's what I won't² do, is go to the bar¹ alone.
- (21) a. What I find utterly ridiculous² is student protest¹ of this nature.
b. That's what I find utterly ridiculous², is student protest¹ of this nature.

The foci of the sentences (20) and (21) are defined as those constituents which receive primary stress, namely bar in (20) and student protest in (21). Although not strictly identical, this pattern is analogous to the changes which occur in sentence stress after the there-insertion transformation is applied. The patterns associated with there-insertion are exhibited in (22) and (23):

- (22) a. A fly¹ is on the wall.
b. There's a fly¹ on the wall.
- (23) a. A snake is crawling through the door.¹
b. There's a snake crawling through the door.¹

The contrasts between the (a) and (b) sentences in (22) and (23) above are very similar to the contrasts which appear in sentences (20) and (21). The lack of stress on there in (22b) and (23b) reflects the fact that it has little or no semantic content. I suggest that the demonstrative pronoun in (20b) and (21b) behaves in a similar manner; that is, with its use, very little semantic content is added to the sentences in this instance. This assumption, if correct, lends support to the view that there is a rule of th-cleft formation similar to there-insertion (I will return to this in Section 4.).

The other form of sentence stress pattern is quite distinct from the first. Consider sentences (24) and (25):

- (24) a. What I won't² do is go to the bar¹ alone.
b. That's what I won't² do, is go to the bar¹ alone.
- (25) a. What I find utterly ridiculous² is student protest¹ of this nature.
b. This is what I find utterly ridiculous², is student protest¹ of this nature.

My intuitions are not entirely clear, but it seems that in (24b) and (25b), the initial demonstrative pronoun serves as a constituent which adds emphasis to the sentence. I take this to indicate an addition of semantic content, albeit a minor one. Thus, we can see that the focus is split to include two coreferential constituents in these special cases.

More importantly, however, the differences exemplified in sentences (24) and (25) are significant in that further support is provided for the grammaticality judgments discussed in Section 2. In other words, the th-cleft sentences in (24b) and (25b) make subtle semantic distinctions which are not possible with the corresponding pseudo-cleft sentences in (24a) and (25a).

This section of the paper has discussed the sentence stress patterns associated with the foci and presuppositions of wh-cleft and the th-cleft sentences. I expect that there may be objections put forth to the analysis presented here, but I will, for the present, assume that it is basically correct. In Section 4, a proposal for the derivation of th-cleft sentences is presented which appears to account for a considerable proportion of the data.

4. Derivation of Th-Cleft Sentences

At one point, transformational grammarians (Chomsky 1970b:209-10; Akmajian 1970a, b) postulated the derivation for pseudo-clefts which is exhibited in (26):

- (26) a. $[_{NP}[_{S}COMP[_{S} \text{ I hate } [_{NP} \text{ wet hair}]]]] \text{ be } [_{PRED} \Delta]$
b. $[_{NP}[_{S}COMP[_{S} \text{ I hate } [\underline{wh-}]]]] \text{ be } [_{NP} \text{ wet hair}]$
c. What I hate is wet hair.

This formulation provides a dummy node in the underlying structure. The focus constituent is extraposed to fill the dummy leaving behind a wh- "pro-form." Finally, wh- is fronted to the COMP node and agreement rules apply to the copula to form the surface structure in (26c).

It seems that this is quite a controversial analysis, particularly with reference to the revised extended standard theory. The important objections here are that the tensed-S, the specified subject, and the subadjacency conditions are all violated in (26).

The tensed-S condition (also termed the propositional island constraint (PIC)) is formulated as follows:

- (27) "... X ... [α ... Y ...] ... X ..." (Chomsky 1977b:74; Chomsky's (11))

where α is a cyclic node and where "PIC asserts that no rule can 'involve' X and Y where α is a finite clause (tensed-S)." (ibid) This condition is

violated in (26) where I hate wet hair is Y and therefore cannot be involved in any movement rule which removes all or part of the clause.

Also applicable to (27) is the specified subject condition which states that "no rule can involve X and Y ... where α contains a subject distinct from Y and not controlled by X." (Chomsky 1977a:176) Once again, I is the specified subject within the embedded clause in (26a) and thus wet hair cannot be moved from its position in the clause.

Finally, sentence (26) violates the subjacency condition in its derivation. Chomsky (1977b) states the subjacency condition as follows:

(28) "A cyclic rule cannot move a phrase from position Y to position X (or conversely) in [the following structure]:

... X ... [α ... [β ... Y ...] ...] ... X ...,
where α and β are cyclic nodes." (p. 73; Chomsky's (6))

Whether we take the cyclic nodes to be NP and \bar{S} , or NP and S, sentence (26) violates the condition. That is, the complement NP wet hair is moved rightward over all three node categories in the derivation, thus violating subjacency.

No clear non-problematic solution to this dilemma is apparent to me at present, at least in the case of pseudo-clefts. The only solution which is reasonable is to base-generate all pseudo-cleft sentences, as Higgins (1973) and Halvorsen (1978) have suggested.

Another objection may be raised to the derivation demonstrated in (26) if one accepts the proper-binding constraint of the trace theory of movement rules.⁷ Freidin (1978) provides the following passage which outlines the basic notions here:

"(8) Proper Binding (PB)

Each bound anaphor α_i in a phrase marker P_j must be

a. bound to some antecedent in P_j ; and

b. c-commanded by its antecedent." (Freidin 1978:521)

where c-command is defined as follows:

"Node A c(onstituent)-commands a Node B if neither A nor B dominates the other and the first branching node which dominates A dominates B." (*ibid.*521n)

In the derivation exhibited in (26), the NP wet hair does not meet the conditions of PB as outlined above. Although the NP does have an antecedent in the phrase marker (i.e. what), the constituent is not c-commanded by that antecedent. The NP wet hair actually appears at the surface in a higher sentence than is its antecedent. Hence the derivation which appears in (26) fails on several counts and must be rejected.

Following Fiengo's (1977:47) trace theory account of there-insertion,

a reasonable proposal for the derivation of th-cleft constructions can be formulated. Neither subjacency, PIC, nor the specified subject condition are violated in this formulation, but rightward movement does occur. The proper-binding constraint, however, is not violated. The derivation is demonstrated in (29), omitting some of the obvious steps:

- (29) a. [_{NP} wet hair] is [_{NP}[_SCOMP[_SI hate [+WH]]]]
 b. [_{NP_i} t] is [_{NP}[_SCOMP[_SI hate [+WH]]]] [_{NP_i} wet hair]
 c. [_{NP_i} that] is [_{NP}[_SCOMP[_SI hate [+WH]]]] [_{NP_i} wet hair]
 d. [_{NP_i} that] is [_{NP}[_S[what]_jI hate [t]_j]] [_{NP_i} wet hair]
 e. That's what I hate -- wet hair.

A brief clarification of the steps in the derivation (29) is as follows: (1) the subject NP wet hair is extraposed to sentence-final position, leaving a trace [t] in (b)⁸; (2) the trace is covered by the demonstrative pronoun that in (c), thus avoiding the improper binding restriction; (3) [+WH] is fronted to the COMP node in \bar{S} by wh-movement and leaves behind [t]_j in object position; and, finally, (4) the surface structure is realized by the (optional) contraction of that is to that's.⁹

This derivation results in the surface structure (29e) which is considered acceptable by almost all speakers. To derive the final structure,

- (30) That's what I hate, is wet hair.

an optional insertion transformation which may be called Copula Reiteration is proposed:

- (31) SD: X - Dem Pron - be - NP - NP - Y
 1 2 3 4 5 6
 SC: 1 2 3 4 + be 5 6

The structural description of Copula Reiteration clearly violates the condition of minimal factorization proposed by Chomsky (1977a). This condition "requires that the SD cannot contain two successive categorial terms unless one or the other is satisfied by a factor changed by the rule." (p 172) I would argue, however, that the transformation (31) is a very low-level rule (i.e. one of Bach's "housekeeping rules") and, for some speakers, quite marginal. Hence, the minimal factorization condition is not necessarily a serious objection, but rather a minor obstacle to the formulation and application of the rule.¹⁰

Note that in (29c), the trace is covered by the demonstrative pronoun, a move that has precedent in the trace theory account of there-insertion (see Fiengo 1977:47). The prediction which is made by the derivation in (29) is that th-cleft constructions are variants of right-dislocated constructions, which seems to be the case.

This analysis is still problematic, but, after months of travail with these sentences, seems to me to be the most useful account available.

Sentences which contain verbal complements as focus constituents are the most damaging to this analysis. Consider the underlying structure presented in (32):

(32) [go to the bar alone] be [_{NP} [_SCOMP [_SI won't do [+WH]]]]

The structure in (32) is problematic because we would expect to find the structure NP - be - NP underlyingly. This objection may be countered, however, by pointing out that the phrase go to the bar alone in (32) behaves like an NP in surface structure; that is, after extraposition, the phrase functions as a predicate nominal.

5. Conclusion

This paper has described an English construction which, to my knowledge, has not been discussed elsewhere. A reasonably well-motivated proposal was made for the syntactic account of the construction. Problems such as tense agreement patterns (sentences (18) and (19) and demonstrative-copula deletion (or insertion) (sentences (1), (14), and (15)) remain troublesome. It is hoped that further exploration into the nature of these constructions can provide properly motivated explanations for these objections.

Most importantly, however, a number of intersentential relationships are accounted for; in particular, the relationship between sentences which undergo Copula Reiteration and those which do not was established. A significant generalization concerning th-cleft formation and there-insertion (i.e. transformations that insert lexical items which have low semantic loads) was made, as well. It is important also that th-cleft constructions fill a semantic function which is not available through the use of other cleft constructions.

As a final note, it may be said that the derivation of th-cleft sentences, as it has been presented here, accords well with the notion of cognitive strategies in sentence production. That is, the proposed Copula Reiteration rule seems to fit a general theory of speech production in that factors such as short-term memory are taken into account. The notion appears promising, but requires much more exploration before anything definite may be stated.

Footnotes

*I wish to express my thanks to V. P. De Guzman and W. D. O'Grady who have been very helpful with their comments of the paper. William O'Grady, in particular, has always been available for discussion of difficult points in the analysis. Needless to say, any mistakes remaining are my own.

¹The question of whether wh-cleft sentences are base-generated or derived is still apparently unsettled. For relevant discussion and proposals, see Chomsky (1970b:209-10) or Akmajian (1970a, b). Cf. Faraci (1971) or Nakada (1973) for the fundamental notions of the "embedded-question" analysis; Peters and Bach (1971) for an exposition of the "deletion" analysis; and Higgins (1973) or Halvorsen (1978) for arguments supporting a single source in the base for pseudo-cleft sentences.

²Some speakers find this sentence ungrammatical; that is, they find a pause preceding the focus constituent (the predicate NP of th-cleft sentences) acceptable, but a form of the copula in that position unacceptable. I will assume, however, that (1c) is acceptable within a certain context, on the grounds that (i) sentences of this type are documented (see J. Szarkowski 1970:15) and (ii) these constructions are heard often in conversation. Regardless, a juncture obligatorily occurs before the focus constituent which is marked with a comma.

³Th-clefts do not, at least, have a structure which corresponds in the same manner. The deep structure which is postulated for th-clefts in Section 4 is as close as one can come to such a correspondence, e.g. "That the earth is round is what I never would have believed."

⁴See Section 4 for a discussion and possible explanation for this fact.

⁵It should be noted that the relative pronoun is obligatorily deleted in (8a) and (9a). See Chomsky and Lasnik (1977:Section 1.B.) for relevant discussion.

⁶The valid objection may be raised that semantic distinctions have nothing to do with grammaticality judgments. I defend the use of grammaticality in this manner by pointing out that grammaticality is poorly understood within the current theory of grammar. My use of the term in this paper refers to the usefulness of the th-cleft; that is, since I am working with a construction which is highly unusual anyway, it seems that the best guess as to what a speaker might say must be presented. Thus, a "grammatical" sentence in this sense is one which might be uttered in conversation.

⁷But see Postal and Pullum (1978) for criticisms of trace theory.

⁸It should be added that a phonological juncture (pause) is obligatorily inserted at the surface in the space which precedes the moved NP.

⁹The derivation of the sentences containing indefinites is similar, e.g.

(i) That's something (that) I hate -- wet hair.

The underlying structure for (i) would be as in (ii):

(ii) [_{NP} wet hair] is [_{NP} something [_SCOMP [_S I hate something]]]

¹⁰Chomsky and Lasnik (1977) posit a transformation which violates the minimal factorization condition, i.e. their "It-insertion" rule (p. 449). This indicates that there is precedent for positing a rule which violates the condition.

References

- Akmajian, A. 1970a. On deriving cleft sentences from pseudo-cleft sentences. *Linguistic Inquiry* 1.2:149-68.
- _____. 1970b. *Aspects of the Grammar of Focus in English*. Unpublished Ph.D. dissertation, M.I.T.
- _____. 1973. The role of focus in the interpretation of anaphoric expressions. In S. Anderson and P. Kiparsky (eds.), *A Festschrift for Morris Halle*, 215-26. New York: Holt, Rinehart and Winston.
- Chomsky, N. 1970b. Remarks on nominalization. In Jacobs and Rosenbaum (eds.), *Readings in English Transformational Grammar*. 184-221. Waltham, Massachusetts: Ginn and Company.
- _____. 1971. Deep structure, surface structure and semantic interpretation. In Steinberg and Jakobovits (eds.), *Semantics: An Interdisciplinary Reader in Philosophy, Linguistics and Psychology*. 183-216. Cambridge: Cambridge University Press.
- _____. 1975. *Reflections on Language*. New York: Pantheon.
- _____. 1977a. *Essays on Form and Interpretation*. Amsterdam: North-Holland.
- _____. 1977b. On *wh*-movement. In Culicover, Wasow, and Akmajian (eds.), *Formal Syntax*. 71-132. New York: Academic Press.
- _____ and H. Lasnik. 1977. Filters and control. *Linguistic Inquiry* 8:425-504.
- Faraci, R. 1971. On the deep question of pseudo-clefts. *English Linguistics* 6:48-85.
- Fiengo, R. 1977. On trace theory. *Linguistic Inquiry* 8.1:35-61.

- Freidin, R. 1978. Cyclicity and the theory of grammar. *Linguistic Inquiry* 9.4:519-49.
- Halvorsen, P.-K. 1978. *The Syntax and Semantics of Cleft Constructions*. Ph.D. dissertation, University of Texas, Austin. Published as *Texas Linguistic Forum* 11.
- Hankamer, J. 1974. On the non-cyclic nature of WH-clefting. *Chicago Linguistic Society* 10:221-234.
- Higgins, F. R. 1973. *The Pseudo-Cleft Construction in English*. Unpublished Ph.D. dissertation, M.I.T.
- Jackendoff, R. 1972. *Semantic Interpretation in Generative Grammar*. Cambridge, Massachusetts: MIT Press.
- Nakada, S. 1973. Pseudo-clefts: What are they? *Chicago Linguistics Society* 9:428-41.
- Peters, S. and E. Bach. 1971. Pseudo-cleft sentences. In *Report to NSF: On the Theory of Transformational Grammar*. GS-2468. Department of Linguistics, University of Texas, Austin.
- Pinkham, J. and J. Hankamer. 1975. Deep and shallow clefts. *Chicago Linguistic Society* 11:429-50.
- Postal, P. M. and G. K. Pullum. 1978. Traces and the description of English complementizer contraction. *Linguistic Inquiry* 9.1:1-29.
- Szarkowski, J. 1970. *E. J. Bellocq: Storyville Portraits*. New York: The Museum of Modern Art.

Particle -sya in Russian:
Mystery, or Defunct Grammatical Relation?*

Douglas A. Hitch

In this paper, through the framework of Relational Grammar (RG), I indicate how the appearance of the Russian particle -sya is syntactically predictable in a much broader range of instances than has been generally thought. Due to limitations of space, the discussions here are too brief to give a thorough accounting of every instance of -sya. However, I believe that the processes and principles outlined here can be applied to all instances successfully.

An obstacle to any syntactic discussion of the particle is presented by two classes of verbs: those which never appear with -sya, and those that never appear without it. A thorough treatment would include an adequate understanding of these classes but this is not achieved here. Some light is cast upon these verbs, and some avenues of future research are indicated in this direction but on the whole I have limited the discussion to verbs which can appear both with and without the suffix. The examination below of some -sya and non--sya paraphrase pairs reveals straightforward syntactic relationships. These relationships are then compared in order to find a common property which may underlie the principle operative in triggering the appearance of the suffix.

There are at least four different hypotheses predicting the appearance of -sya:

1. No principles govern the appearance of -sya.
2. Some appearances of the particle are principled, but many are not.
3. All appearances are according to principle, but more than one principle is operative.
4. A single principle governs all appearances of -sya.

The first hypothesis is weakest, and is not held by anyone to my knowledge. The second is the traditional one and is found in most of the literature on the subject. Leaving the third hypothesis aside for a moment, the fourth hypothesis is the strongest and would offer the greatest simplification to the grammar. This, therefore, is the hypothesis sought here. However, since the final generalization achieved in the present investigation contains an either-or statement, and since the interaction with aspect is not completely resolved, the third hypothesis is the most acceptable at this point.

The syntactic processes involved in the appearance of -sya are

*Special thanks are due to Terry Klokeid and William O'Grady who made a multitude of valuable comments and criticisms, at several stages of this paper. I bear complete responsibility for the remaining errors and weaknesses.

outlined in the framework of RG because the latter provides a set of rules and laws which offer a straightforward account of the phenomenon.

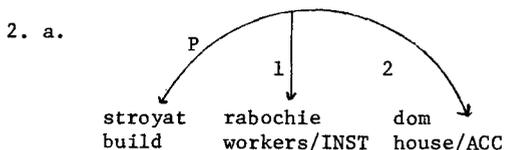
The occurrences of the particle -sya which are probably best understood by traditional grammarians are those in passive, reflexive, and reciprocal sentences. In fact, from the syntactic processes involved in these, an initial hypothesis is formable which closely resembles the one to be stated finally. For these reasons I begin the discussion with these sentences.

1. Passives

In Relational Grammar, passivization receives universal expression in the rule of 2-1 Advancement. This means that what is semantically the patient of a sentence, and therefore the initial direct object, is also the final subject. Consider the active-passive pair 1a-1b. The semantic relations are the same for both, but in the active, 1a, the agent is final subject while in passive 1b the patient is final subject. In Russian the final grammatical relations (GR) of nominals are in general indicated by case. Subjects appear in NOM¹ and direct objects in ACC.

1. a. Rabochie stroyat dom.
Workers/NOM build house/ACC
'The workers are building the house.'
- b. Dom stroitsya² rabochimi.
House/ACC builds workers/INST
'The house is being built by the workers.'

It is the working hypothesis of RG that the semantic relation of any nominal determines in an invariant and universal fashion, the initial GR of that nominal. Under this assumption, the sentences in 1 have the same initial GR. These can be illustrated by means of a network of arcs. (I adopt here the terminology and notation of RG exemplified in Perlmutter and Aissen (1976), etc.) 2a is the network for 1a.

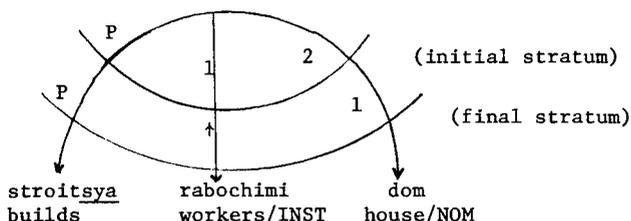


In RG, subjects are labelled 1, and direct objects, 2. Agents are initial 1s and patients are initial 2s. In this way, 2a shows both the initial and final relations of the nominals in 1a. Rabochie 'workers' is both agent (hence initial subject) and final subject, while dom 'house' is patient (hence initial direct object) and final direct object.

In 1b, however, the initial and final relations are not the same. Since dom, the patient, is also final subject, it is said to have advanced from the initial 2-relation to the final 1-relation. Two distinct stages of grammatical relations, or strata, are, then, observable here: an initial stratum directly linked to the semantic relations and a final stratum which

shows the ultimate grammatical relations. 2b is the network for 1b.

2. b.



The grammatical relations 1 and 2 together with indirect objects (3) are defined in RG as terms. There can be only one nominal bearing a particular term relation per stratum.³ Because of this, in 2b above, when dom 'house' advances to 1, rabochimi 'workers' can no longer retain its 1-hood. This latter term is said to be en chômage. Since chômeurs often show the syntactic and morphological characteristics of their previous term-hood, they are represented by means of their former numerical status with a circumflex accent. Thus, rabochimi 'workers' in 2b is initially 1 and finally $\hat{1}$ (1-chômeur). It is characteristic of Russian 1-chômeurs which are created by 2-1 Advancement that they appear in INST.

In the active-passive pair above, repeated here as 3a-3b, -sya occurs only in the passive.

3. a. Rabochie stroyat dom
 Workers/NOM build house/ACC
 'The workers are building the house.'

b. Dom stroitsya rabochimi
 House/NOM builds workers/INST
 'The house is being built by the workers.'

It could thus be claimed that -sya is the morphological side-effect of 2-1 Advancement. However, passivization in Russian is more complicated than this for two reasons. First, not all passives show the particle, and second, not all active sentences can be passivized. To my knowledge, neither of these complications is entirely resolved in any extant analysis. For this reason, I feel some comment in this regard is justified although it constitutes a digression from the main topic.

In my opinion, there are two clearly definable parameters of the class of sentences which can be passivized with -sya. The first parameter is related to aspect, and the second to animacy.

2. The Aspect Parameter

In the literature on Russian syntax there is an awareness that verbal aspect plays a role in passivization with -sya. At the same time, nowhere, to my knowledge, is the claim made that an exception-free statement

in this regard is possible. Yet it seems that there are no exceptions to the following rules:

4. a. Imperfective verbs always passivize with -sya and never with the short form present passive participle and the verb byt' 'to be'.
- b. Perfective verbs always passivize with the short form past passive participle and the verb byt' 'to be' and never with -sya.

These rules are operative in the passivization of the imperfective and perfective counterparts of the verb vypolnyat': vypolnit' 'to fulfil', as shown in 5 and 6 below.

5. Imperfective
Active Uchenik vypolnyaet zadanie
 Student/NOM fulfils task/ACC
 'The student is fulfilling the task.'

Passive Zadanie vypolnyaetsya uchenikom
 Task/NOM fulfils student/INST
 'The task is being fulfilled by the student.'
6. Perfective
Active Uchenik vypolnil zadanie
 Student/NOM fulfilled task/ACC
 'The student fulfilled the task.'

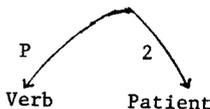
Passive Zadanie vypolnen uchenikom
 Task/ACC (is) fulfilled student/INST
 'The task was fulfilled by the student.'

In the literature, lists of sentences are to be found which are considered exceptional to the proposed rules 4a and 4b. I will deal with the apparent exceptions to the latter rule first because those related to 4a are closely involved with the animacy parameter and are best discussed as an introduction to it.

3. Apparent Exceptions to 4b: "Perfective Passives with -sya."

Harrison (1967) gives a list of at least sixteen semantic classes of perfective verbs which he claims passivize with -sya. In RG, however, these are uniformly analysed as representative of the so-called unaccusative construction, that is, as sentences whose initial network of GRs includes a 2 but no 1.

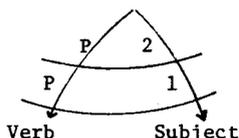
7. Initial relations of unaccusatives



Because sentences must have a final subject,⁴ it is a universal principle

of RG that in any stratum where there is a 2 in the absence of a 1, the 2 automatically advances to 1. 8 shows this further evolution of unaccusative sentences.

8. Final relations
of unaccusatives



In this way, the subjects of this class of verbs are also patients. For instance, in 9, komnata 'room' is patient and final subject.

9. Komnata zastavilas' mebelyu
Room/NOM stuffed furniture/INST
'The room was stuffed with furniture.'

In the unaccusative construction, the 2 advances to 1 because there is no initial 1. The RG analysis therefore predicts that these sentences would not appear with an agent, and this is correct. Example 10 (from Harrison 1967) is ungrammatical because there is an agent expressed.

10. *Biblioteka otkryvas' bibliotekarem
Library/NOM opened librarian/INST
'The library was opened by the librarian.'

The sense of this sentence must be rendered in Russian either by 11a or 11b (from Harrison 1967).

11. a. Bibklioteka byla otkryta bibliotekarem
library/NOM was opened librarian/INST
b. Biblioteku otkryl bibliotekar'
library/ACC opened librarian/NOM

In Harrison's analysis, not only must the semantic classes of perfective verbs which can passivize with -sya be listed separately but a restriction on the use of agents with these sentences must also be indicated. In the RG analysis, neither of these devices is necessary since these verbs are not passive. In addition, the unaccusative construction by definition does not occur with an agent.

The apparent exceptions to 4b are not exceptional because they are actually representative of a sentence type which is not passive. That 4a is also exception-free is more difficult to show.

4. Apparent Exceptions to 4a: "Imperfective Passives with the present participle passive."

I. Pulkina and E. Zakhova-Nekrasova (1960:390) make the following comments relative to rule 4a:

In Modern Russian the short form present participles passive of only a few verbs are used (lyubit' to love, uvazhat' to respect, tsenit' to value, xranit' to keep, muchit' to torture, ugnetat' to oppress, etc.). The use of the participle is restricted to the bookish language and even there they occur but rarely.

At the same time, the short form past participle passive is frequent in both the literary and colloquial language. This great discrepancy in usage is not in itself justification of Rule 4a but it is indicative of an underlying principle which provides justification.

Sentences 12a and 13a contain examples of the short form present participle passive. The b counterparts represent the more usual mode of expression.

12. a. Pisatel' lyubim narodom
writer/NOM (is) loved people/INST
'The writer is loved by the people.'
- b. Pisatelya lyubit narod
writer/ACC love people/NOM
'The people love the writer.'
13. a. On uvazhaem vsemi tovarishchami
He/NOM (is) respected all friends/INST
'He is respected by all his friends.'
- b. Ego uvazhayut vse tovarishchi
Him/ACC respect all friends/NOM
'All his friends respect him.'

There are two things to note about these verbs. First, they seem to be semantically limited to interpersonal relationships or at least to sentences in which the patient is a person. Secondly, it is impossible to use a -sya passive in these instances although the verbs are imperfective.

What I think is producing these constructions is a principle in Russian which prohibits an animate being from being the final subject of a predicate of external agency. Animate figures are regarded as potential participants in an action. Thus when they appear as final subjects they must have a greater role in the action than that of patient. The subjects of 12a and 13a may be regarded as being loved and respected because of their actions with respect to writing or friendship. In the b sentences (active constructions) the same figures are merely direct objects and it is possible that they have no active role in being loved and respected. In a -sya passive construction (ungrammatical here) they would have the same role as in the b (active) sentences: semantic relations are identical for actives and passives. Thus, these constructions may be seen as an attempt at a sort of a middle voice in which the patient is in some way also an active participant. If this proposition is accepted then these sentences can be considered to be something other than passive, and thus not exceptional to 4a.

In my opinion, this sense of a middle voice appears elsewhere in Russian. As would be expected, its appearance causes much confusion in understanding the passive voice since the two are closely related. This also clouds the view of principled appearances of -sya because the particle can be found both in middle and passive constructions. In fact, a delineation of the second parameter of passives with -sya involves clarifying the status of the apparent exceptions which are really other attempts at a middle voice.

5. The Animacy Parameter

Michael K. Launer (1974:100) makes a statement concerning this parameter which is the most absolute to my knowledge.

Russian transitive verbs are not passivized if the direct object, NP ACC, is animate -- an exception is interesovat'. What often occurs instead is the inversion of the active sentence.

He permits this single exception because he considers sentences like 15 and 16 to be derivationally related, 16 being the passive variant of 15.

15. Matematika interesuet Irinu.
mathematics/NOM interest Irene/ACC
'Mathematics interest Irene.'

16. Irina interesuetsya matematikoy.
Irene/NOM interests mathematics/INST
'Irene is interested in mathematics.'

It is noteworthy that the morphology of what Launer considers to be the agent, includes, in the English translation of 16, the preposition 'in'. It may be argued that English passives require the agent in a 'by-phrase' and thus the translation is not passive. But it would be inappropriate to argue that this is a non-exception purely on semantic grounds ('interested in' and 'interested by' may mean different things in English) by evoking semantic and morphological parallels from a different language. However, semantics does play a role in creating this 'exception'. In fact, there are several other verbs which are semantically related to interesovat' 'to interest' which show parallel syntactic behaviour. These fit the same criteria which Launer applied to his exception and so would likely also be considered exceptional by him.

17. uvlekat' - uvlech' = to fascinate
voskishchat' - voskhitit' = to enrapture
zanimat' - zanyat' = to occupy
vostorgat' - -- = delight
pol'zovat' - -- = to treat⁵
balovat' - -- = to indulge

These verbs all appear in the form /NOM Verb ACC/ or /NOM Verb+sya INST/

and so near paraphrases of the type in 15-16 are construable for all. That so many other exceptions exist to Launer's rule and that they are somewhat related semantically requires some explanation.

Launer (1974:100) actually mentions another verb, udivlyat': udivit' 'to amaze' which:

seems to function similarly, but the -sya-form governs the dative case rather than the instrumental and is not, strictly speaking, passive.

This analyst desires to consider interesovat' and udivlyat': udivit' to be syntactically related but is prevented by his rules from doing so. In the framework of RG, on the other hand, these verbs can be shown to be syntactically related. Consider Launer's examples 11b and 11c given respectively as 18 and 19 below. There are two clauses involved here, the rightmost of which may be overlooked in this discussion. In 18 (non-sya) what I gloss as 'it' appears in NOM, while 'me' is in ACC. In 19 these nominals show up in DAT and NOM respectively. I offer separate translations to give a closer approximation of the constructions in English.

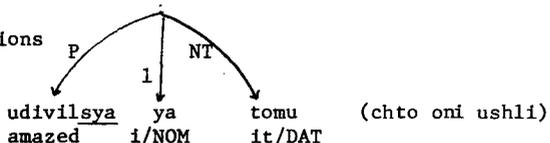
18. Menya udivilo to, chto oni ushli.
me/ACC amazed it/NOM that they left
'I was amazed that they left.' (Launer's translation)
'It amazed me that they left.' (My translation)

19. Ya udivilsya tomu, chto oni ushli.
I/NOM amazed it/DAT that they left
'The fact that they left amazed me' (Launer)
'I am amazed at their leaving' (my translation)

None of the grammarians I consulted treat sentences like 19 as true passives. Indeed, it is possible that 18 and 19 are not syntactically related, but I think this is unlikely.

At this point the notion of non-term (NT) needs an introduction. It was mentioned earlier that 1, 2, and 3 are called terms. All other sentential elements, including chômeurs, are NT. It is my opinion that tomu 'it' in 19 is a final NT. Final relations of 19 are shown in network 20.

20. Final relations
of 19.



Since the subject of 19 ya 'I' is a patient it is initially a 2. Thus, at some stage prior to that of the final relations there might be a 2 and a NT. If the 1-relation is absent, then by the unaccusativity principle the 2 would advance, giving final relations. These tentative and hypothetical relations are shown in 21.

Earlier I claimed that much of the confusion about the passive is related to an effort to formulate expression in a middle voice. Such confusion has led one analyst to state an ad hoc rule concerning sentences which have reflexive morphology (this involves -sya) but are semantically related to passives. Harrison (1967:12) gives the following rule:

23. reflexive verbs proper are not used with an animate subject and an animate agent to express the passive.

It is sentences like 24 and 25 which induce this analyst to make the above formulation. 24 is plainly reflexive, the subject being both agent and patient, while in 25 there is agency implied which is external to the subject.

24. Ya breyus'
I/NOM shave
'I shave (myself).'

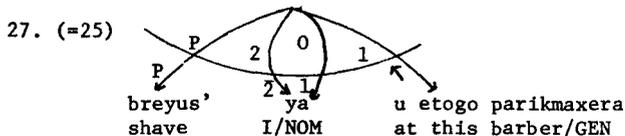
25. Ya breyus' u etogo parikmaxera
I/NOM shave at this wig-maker/GEN
'I get shaved at this barber's.'

In 25 it is clear to the Russian that the barber is doing the shaving but an ungrammatical sentence is the result if parikmaxer 'barber' is put in INST, the case for agents in Passives.

26. *Ya breyus' etim parikmaxerom
I/NOM shave this wig-maker/INST
'I am shaved by this barber.'

In my analysis this ungrammaticality would be predicted by the APA Law. Yet the fact remains that there is agency understood in 25. Since semantic relations are initial GRs, the implied agent in 25 is initially a 1. But ya 'I' as patient or initial direct object (2) cannot advance to subject (1) if there is a 1 already present (according to the APA Law). Something must happen to the initial 1, which allows the patient to become final subject. This is a process which I would like to call Greedy Patient.

The Greedy Patient construction works as follows: a nominal bearing the patient relation, because it is also in some way a participant, usurps the relation of agent. At the same time it does not relinquish the relation of patient. The nominal, which is probably always animate, now bears both agent and patient relations -- the criterion of a reflexive -- and so the verb shows reflexive morphology (-sya).⁶ These developments are shown for 25 in network 27.



In 27, ya 'I' is the Greedy Patient which usurps the 1 relation. This puts the initial 1 en chômeage. Earlier it was shown that in passives the 1-chomeur (created by 2-1 Advancement) appears always in INST. Here the 1-chomeur is created by a Greedy Patient. It seems that Greedy Patient produced chomeurs belong to that class of NTs which appear in idiosyncratic, semantically determined morphology.

At this point I would like to backtrack and use the now motivated notion of Greedy Patient to strengthen the proposal that the apparent exceptions to the two parameter rules for passives with -sya are actually representative of a different construction.

A short form present passive participle with the verb byt' (12a and 13a) is an effect of a Greedy Patient. These verbs are participialized, and not suffixed with -sya, when exposed to Greedy Patients for perhaps three distinct but related reasons. First, some of these verbs, lyubit' 'to love', uvazhat' 'to respect', and ugnetat' 'to oppress', have no form with -sya.⁷ Second, some of these verbs when used with -sya only occur with object patients: tsenit'sya 'to be valued' (refers to value or price of objects), xranit'sya 'to be kept' (money, silence or information in one's memory). Third, at least one verb muchit'sya 'to be worried' takes NTs in INST. (This latter could be included in 17, the list of exceptions to Launer's rule.) Perhaps the sentence morphology too closely resembles the passive, which is ungrammatical by the APA Law, and so the -sya form is avoided. For these reasons, when the sense of a middle voice is required the language has to turn to a non--sya construction and this is supplied by the participles. Although the agents in these constructions are in INST, they are not created by 2-1 Advancement. Although I cannot with assurance provide a reason for this particular case marking it could be that it is used by analogy to the other participial passives.

The exceptions to Launer's rule are also representative of the Greedy Patient construction, and are not unaccusatives as I tentatively suggested. It is this construction that relates the two verbs, interesovat' 'to interest', and udivlyat' 'to amaze' which Launer desired to consider related.

The morphological coincidence of objects of the verbs in list 17 with the agent in passives has presented difficulty for other analysts as well. Harrison (1967) offers a sentence containing a verb from 17 to claim that sentences with animate agents can be passivized. Indeed, it is tempting to consider this sentence (28) below as a passive since the morphology mimics that construction. Yet the instances of animate nominals appearing in INST with -sya verbs are very few. Also, if a true passive, this sentence would present a clear counterexample to the APA Law.

28. (from Harrison 1967)

Deti chasto baluyutsya roditelyami
children/NOM often indulge parents/INST
'Children are often spoilt by their parents.' (Harrison's
translation)

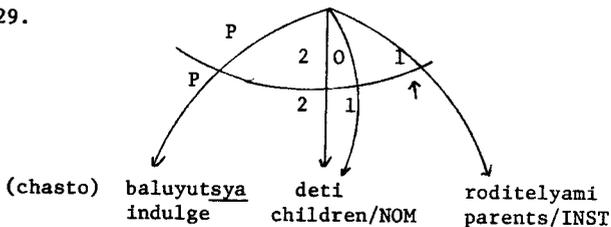
'Children often indulge in their parents.'

or

'Children often get spoiled by their parents.' (my translations)

I think this sentence (along with the other verbs in 17) is best analyzed with deti 'children' being both patient and agent. This is the reason for the last translation above involving a so-called 'get passive'.⁸ 29 below illustrates the Greedy Patient construction involved in 28.

29.



In 29, deti 'children' usurps the 1 relation triggering verb agreement and the reflexive morphology (-sya). The 1-chomeur, roditelyami 'parents', is in INST not because it has been put en chōmage by an advancement of a 2 but because that is the idiosyncratic NT marking determined by the semantics of the verb.⁹

The notion of 'Greedy Patient' may appear to be a convenient, more or less ad hoc means of accounting for the data. Yet it seems that the concept 'greedy' can be extended to agents as well. Consider the verb slushat' -- poslushat' 'to listen to'. This is an interesting example because the English translation of the -sya forms of this verb must be effected with verbs which are for English speakers verbs unrelated to 'to listen to'. Usually slushat'sya - poslushat'sya is glossed with either 'to obey' or 'to follow'. Also, interestingly enough, the non-sya verb takes a nominal ACC while the -sya takes GEN. Sentences 30 and 31 are examples of the 'listen' translation while 32 and 33 show the others.

30. Ya slushayu ego
 I/NOM listen him/ACC
 'I listen to him.'

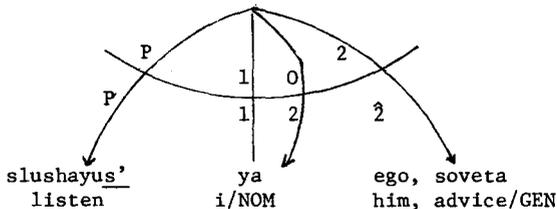
31. Ya slushayu sovet
 I/NOM listen advice/ACC
 'I listen to the advice.'

32. Ya slushayus' ego
 I/NOM listen him/GEN
 'I obey him.'

33. Ya slushayus' soveta
 I/NOM listen advice/GEN
 'I follow the advice.'

In 32 and 33 ya 'I' is agent (initial 1) while the nominal in GEN is patient (initial 2). Since the subject is in some way also being acted on by the other nominal, it usurps the 2 relation putting the initial 2 en chômage. Now that the greedy agent possesses both a 1 and a 2 relation, the criterion of a reflexive is met and reflexive morphology (-sya) is taken by the verb. The particular form of the $\hat{2}$ is determined by the semantic property of the verb. 34 is a network for 32 and 33.

34.



At least one other verb behaves like slushat' 'to listen'. In the non-sya form of sentences with dobivat' - dobit' the translation of the verb is something like 'finish off' or 'deal the final blow to' and the object is in ACC. With the particle, the meaning is 'obtain', 'achieve', or 'secure' and the object is in GEN.

6. Summary of Passives with -sya

Two exception-free rules describe the parameter of the class of sentences which can passivize with -sya. The effect of these is that no perfective verb with -sya is a true passive and that no sentence with an animate patient can be passivized. Perfective verbs appearing with -sya are unaccusative constructions. Short form present passive participles and many -sya verbs with animate subjects are attempts at a 'middle voice' and are effects of a greedy agent or patient. Thus, none of the apparent exceptions are examples of the passive construction.

A simple statement describing passives with -sya is possible:

35. -sya appears with 2-1 Advancement within the animacy and aspect parameters.

No further remarks on the passive will be made for the moment.

The second group of sentences in which the appearance of the particle is understood by most grammarians to be triggered by a syntactic effect, does not involve 2-1 Advancement.

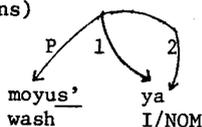
7. Reflexives and Reciprocals (RR)

Although these types of sentences are considered separately in traditional grammars, in RG the same sort of relationships occur in both; for this reason I consider them together.

In reflexives the final subject is initially both a 1 and a 2. Thus sentence 36 will have network 37.

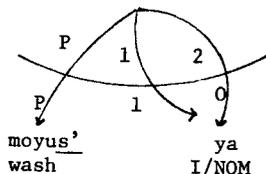
36. Ya moyus'
I/NOM wash
'I wash (myself)' or 'I'm washing up.'

37. (Initial relations)



A single nominal can bear only one relation overtly in Russian. Since there is no ACC nominal on the surface, it may be said that the 2-relation has been nullified in favour of the requisite subject. This is usually shown by means of a surface stratum in which the initial 2 arc bears a final 0. 38 is the more complete network for 36.

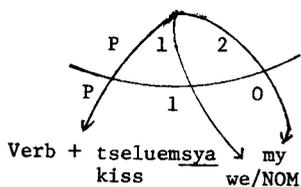
38.



In reciprocals as well, the final subject is initially both a 1 and a 2. Thus sentence 39 will have network 40.

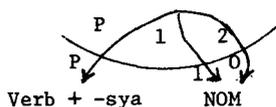
39. My tseluemsya
We/NOM kiss
'We kiss (each other).'

40.



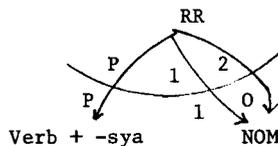
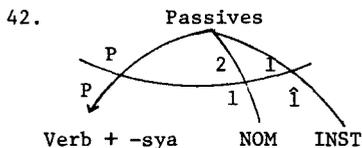
As for reflexives, the relation of patient has no surface form. However, both of the verbs in these examples may appear with a nominal ACC but in such cases -sya does not show up.¹⁰ The relevant details of a network for both reflexive and reciprocal sentences may be abstracted. 41 represents such an abstraction.

41. Abstract network
for reflexives and
reciprocals (RR)



8. The Hypothesis

For traditional grammarians passives and RR are perhaps the best understood appearances of -sya. Taking just these two constructions it is possible to select an activity common to both and propose this to be related to the appearance of the particle. In 42 are abstract networks for Passives and RR.



It may be said that in passives the appearance of -sya is associated with 2-1 Advancement while in RR it is associated with an initial 2 having no surface form. From these facts I tentatively propose hypothesis 43 as representing the principle governing the appearance of the particle.

43. -sya appears when an initial 2 becomes a 1 or 0 in the final stratum.

Although the Greedy constructions were not considered in the positing of 43 it will be readily seen that they are consonant with it. As in RR, the 2-relation is nullified. Yet there is a significant problem with the hypothesis as it now stands. A major category of constructions, the passives with perfective verbs, does not conform to the formula. The reason seems to me to be intimately linked with the verb byt' 'to be' which is used in this type of passive. The RG notion unaccusative is a key concept in understanding the special nature of byt'.

9. The Unaccusative

Basically, this term means 'a 2 in the absence of a 1'. It can be ascribed either to sentences (thus verbs), in which case the term refers to the initial relations, or it can be applied to strata which fit the description above and which appear elsewhere in the course of the evolution of a sentence.

What are sometimes called existential and/or equational verbs are considered to be unaccusative. Hypothesis 43 would predict that these would all have -sya on the surface, but this is incorrect.

There are possibly four distinct types of equational-existential verbs in Russian. It can be shown that regular and consistent principles regulate an otherwise baffling maze of data in this regard.

10. Group One

There is a group of verbs in which there is a four way contrast discernible which is drawn by aspect and unaccusativity. That is, there are perfective and imperfective, unaccusatives and ergatives (ergative means a 1 in the presence of a 2; this is traditionally called transitive).

<u>Ergatives</u>	<u>Unaccusatives</u>
delat' - sdelat' (to make, to do)	delat'sya - sdelat'sya (to become, to happen)
kazat' - pokazat' (occurs in single phrase: 'ne ... glaz', 'to avoid seeing')	kazat'sya - pokazat'sya (to seem)
okazyvat' - okazat' (to render; when this means: 'to cause to become')	okazyvat'sya - okazat'sya (to turn out/be found/prove to be)
yavlyat' - yavit' (to show)	yavlyat'sya - yavit'sya (to appear, to be)

A further complication could be added to this chart. In the unaccusative column only the imperfective verbs can be considered equational-existential. This aspect implies either a condition or a set of repeated acts which may be thought to represent a characteristic. The perfective on the other hand can not be considered equational-existential because a single act, and not a state, is denoted by them.

11. Group Two

Another group shows a three way contrast. There are perfective and imperfective ergatives but only imperfective unaccusatives. Two of the perfectives here may also appear with -sya but their meanings are different from that of the imperfectives.

<u>Ergatives</u>	<u>Equational-Existential Unaccusatives</u>
nazyvat' - nazvat' (to call)	nazyvat'sya - (nazvat'sya) (to be called) (call oneself, assume the name)(reflexive construction)
schitat' - schest' (to consider)	schitat'sya - - - - - (to be considered)
naxodit' - nayti (to find)	naxodit'sya - (naytis') (to be (located)) (to be found (once)) (unaccusative construction)

Again only the imperfectives with -sya are equational-existential. This class alone denotes a state rather than an action.

12. Group Three

The third group shows an interesting two-way contrast between imperfectives with -sya and perfectives without. It is noteworthy that imperfectives without -sya and perfectives with it simply do not exist for these verbs.¹¹ An analysis similar to that used for the preceding groups may be applied here. The imperfectives represent a state of lying, sitting, or standing, which may be considered a form of being. In this way they are seen to be existential. The perfectives describe one act of lying down, sitting up/down, or standing up. Action rather than beingness is the semantic content of these verbs. Traditionally intransitive, these verbs in RG would be called 'unergatives'. This is defined as a verb whose initial relations include a 1 in the absence of a 2.

<u>Unergatives</u> (perfectives only)		<u>Unaccusatives</u> (imperfectives only)	
lech'	- 'to lie down'	lozhit'sya	- 'to be lying'
sest'	- 'to sit up/down'	sadit'sya	- 'to be sitting'
stat'	- 'to stand up' or 'to become'	stanovit'sya	- 'to be standing' or 'to be becoming'

13. Group Four

The fourth discernible group has no contrasts of aspect or of unaccusativity. Each verb has only an imperfective non--sya form. Because these are existential-equational, and hence unaccusatives, hypothesis 43 would predict the appearance of -sya. But this is not the case. The previous three groups all showed their equational-existential counterparts with the suffix, so why does none occur here? The absence of -sya is due, in my opinion, to the lack of contrast with aspect and other verb types. The first three sets of verbs contained members of the perfectives aspect and representatives of other constructions: reflexives, ergatives, unergatives, as well as non-existential-equational unaccusatives. Since the following verbs invariably appear in only one construction and have only one aspect it is possible that there is no motivation for appending the particle.

Non-Contrasting Existential-Equational Unaccusatives

byt'	- to be
byvat'	- to be, to happen, to take place
sushchestvovat'	- to exist, to be
zhit' ¹²	- to live

At this point the problem with hypothesis 43 is open to clearer consideration. It will be remembered, that passives formed with perfective verbs have no -sya in their make-up. These passives consist of the short form past participle passive and the verb byt' 'to be'. This verb has only one form and it appears in only one construction: equational-existential. Since there is no contrast in usage, the existence of the

verb itself implies 2-1 Advancement and so -sya is redundant.

The short form past passive participle may occur with other equational verbs.¹³ That these always appear with the particle is the result of their membership in one of the other three groups where contrasts exist. These verbs behave according to the predictions of 43.

Sentences 44a and 45a are examples of equational uses of the verb byt' 'to be'. 44b and 45b are related to their 'a' counterparts and use equational verbs from the other groups.

44. a. kniga na stole
book/NOM on table/LOC
'The book is on the table.'
- b. kniga naxodit sya naxoditsya
book/NOM is (located) on table/LOC
'The book is (located) on the table.'
45. a. On xoroshim diplomatom
he/NOM good diplomat/INST
'He is a good diplomat.'
- b. On schitaetsya xoroshim diplomatom
he/NOM considers good diplomat/INST
'He is considered a good diplomat.'

A condition can now be stated on hypothesis 43 which will account for the non-appearance of -sya with perfective passives.

Condition on hypothesis 43: The verb must have a form which appears in constructions other than the unaccusative.¹⁴

14. Other Unaccusatives

The notion of the unaccusative sentence in RG provides a simple explanation for the appearance of -sya in what for many authors is a multitude of widely disparate categories. There are several classes subsumed under the general heading but it is not necessary to consider them separately if it can be shown that all unaccusatives behave in the same way with respect to -sya.

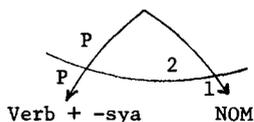
In the following sentences there is no agency expressed and the patient appears as final subject.

46. Nashe xozyastvo razvivaetsya
our economy/NOM develops
'Our economy is developing.'
47. Chuvstvovalas' svezhest'
felt coolness/NOM
(Lit: 'A coolness was felt.')
- 'There was a chill in the air.'

48. Tam delayutsya strannye veshchi
 there do strange things/NOM
 (Lit: 'There are done strange things there.')
- 'Strange things happen there.'

It is possible from these examples above to abstract the information relative to the construction. This is the basis for network 49.

49. Abstraction of the
 Russian Unaccusative



This abstraction is not absolutely general: when the condition on hypothesis 43 is not met, then -sya does not appear.

Other appearances of -sya are associated with what are traditionally termed Impersonals. This group actually comprises entirely different syntactic constructions. One of these constructions would be called in RG '1-3 Retreat'.

15. 1-3 Retreat

One author does distinguish this category from others containing -sya and from other Impersonals. A. A. Vil'gel'minina (1963) terms this group 'Reflexive - Passive'. In the RG analysis this is neither reflexive nor passive.

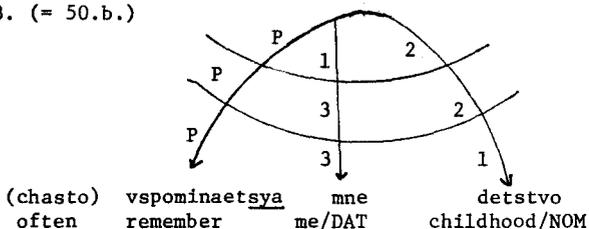
The process of 1-3 Retreat involves an initial 1 (agent) becoming final 3 (experiencer). Experiencers in Russian appear in DAT. In the following sentences (50 - 52) the a. counterparts have the person involved as subject (1) while in the b.'s he/she is experiencer (3). The patients show up in ACC (2) in the a. sentences and in NOM (1) in the b.'s

50. a. Ya chasto vspominayu detstvo
 I/NOM often remember childhood/ACC
 'I often remember my childhood.'
- b. Mne chasto vspominaetsya detstvo
 me/DAT often remembers childhood/NOM
 'My childhood often comes to my memory.'
51. a. Nakonets ya pripomnil ego ideyu
 finally I/NOM remembered his idea/ACC
 'I finally remembered his idea.'
- b. Mne nakonets propomnilas' ego ideya
 me/DAT finally remembered his idea/NOM
 'His name finally came to me.'

52. a. Ona predstavlyala avariya vsyo yasnee i yasnee
 she/NOM pictured accident/ACC all clearer and clearer
 'She pictured the accident more and more clearly.'
- b. Ey predstavlyalas' avariya vsyo yasnee i yasnee
 her/DAT pictured accident/NOM all clearer and clearer
 'The accident appeared more and more clearly to her.'

In the framework of RG experiencers are initial 1's. This principle allows positing the following construction for the b. sentences. In the initial stratum there are an agent (1) and patient (2). In the second stratum, the agent becomes experiencer which implies a retreat from 1 to 3. This makes the second stratum unaccusative which automatically triggers 2-1 Advancement in the final stratum. These developments are shown in network 53 for sentence 50b.

53. (= 50.b.)



From the above illustration it can be seen that hypothesis 43 can account for this appearance of the particle here as well. Detstvo 'childhood' is an initial 2 which becomes 1 in the final stratum.

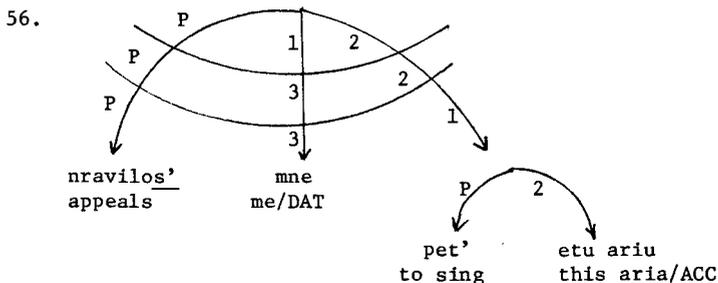
In RG non-nominal sentential elements can also bear GR. This is true of subordinate clauses. When the subject of the downstairs verb is not present (after having been removed by EQUI or RAISING) the verb in Russian appears in the infinitive. In this way sentences like 54 and 55 can be seen to be related by a rule of 1-3 Retreat.

54. Ya lyublyu pet' etu ariyu
 I/NOM love to sing/inf. this aria/ACC
 'I love to sing this aria.'
55. Mne nravitsya pet' etu ariyu
 me/DAT appeals to sing/inf. this aria/ACC
 'To sing this aria appeals to me.'

Although the verbs in 54 and 55 are morphologically distinct, it is possible to consider them as reflexes of the same verb.¹⁵ One never appears with -sya and the other never appears without it. They seem to me to be closely related semantically, their meanings being separated by a nearly indefinable nuance. If they are considered to be reflexes of the same

verb then several things are simplified: there would be two fewer 'holes' in the lexicon; the semantic similarity could be explained; and the shade of meaning separating them can be understood by the rule of 1-3 retreat which applies to one form always.¹⁶

The network for 55, given below as 56 shows that the appearance of -sya even when subordinate clauses are involved is consonant with hypothesis 43.



Another process in which -sya is triggered is one in which otherwise ergative (transitive) verbs appear with no overt 2. By positing that a 2 exists initially but that it is not expressed because there is no definable direct object, it can be shown that these appearances of -sya are also consonant with hypothesis 43. Since in RG these might be called ergatives with no overt 2 I will refer to this construction as ENO 2.

16. ENO 2

Vil'gel'minina (1963:126) has a set of sentences of this construction (with one exception)¹⁷ in a separate category: "Verbs with Active Objectless Meaning". Other authors generally confound these with unaccusatives. According to this grammarian:

These verbs denote actions which are typical of certain animate beings or things and are in fact their inalienable attributes.

In my opinion, only sentences with animate subjects can be of this construction. Others are unaccusatives.

The following examples are popular with many analysts:

57. Sobaka kusaetsya
dog/NOM bites
'The dog bites (habitually).'
58. Loshad' lugaetsya
horse/NOM kicks
'The horse kicks (habitually).'

59. Staruxa rugaetsya
old woman/NOM scolds
'The old woman swears.' (Lit. 'The old woman scolds (habitually).')

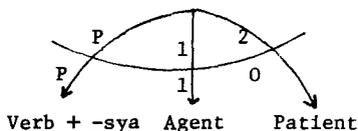
Here the presence of -sya denotes an habitual action of the subject. The verbs without the particle take an object (patient) in ACC, but these sentences do not imply that the action is characteristic. Compare 60 with 57.

60. Sobaka kusaet moyu nogu
dog/NOM bites my leg/ACC
'The dog bites my leg.'

In 60, the dog may not be a 'biter' while in 57 it is the intent of the sentence that the dog is. 60 implies either 'is biting my leg at the moment' or 'habitually bites my leg'.

Since the action is habitual in 57-59 a specific direct object cannot be expressed. However, if the action is directed in specific instances, then the patients are identifiable as in 60 (moyu nogu 'my leg'). I propose that these constructions have initial relations of 1 and 2 (agent and patient) but since the patient is general and unspecifiable it has no surface morphology. Because this is an initial 2 becoming 0 in the final stratum this analysis is consonant with hypothesis 43. An abstract network for ENO 2 constructions is given in 61.

61. Abstraction
of ENO 2

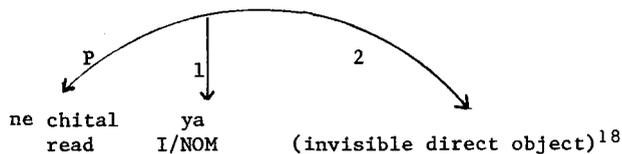


The reality of the invisible patient in 57 - 59 and 61 may seem questionable. However, another construction provides further evidence that it exists.

In a sentence like 62 there is no direct object because only the action is of interest. If a direct object is underlyingly there, but has no surface form because all attention is on the action (network 63), then it would be expected to advance to 1 after 1 - 3 Retreat. Sentence 64 shows what I think is the result of these processes. This would traditionally be considered an impersonal sentence, so I will call it Impersonal ENO 2. Its relations are given in 65.

62. Ya ne chital
I/NOM not read
'I was not reading.'

63. (= 62)

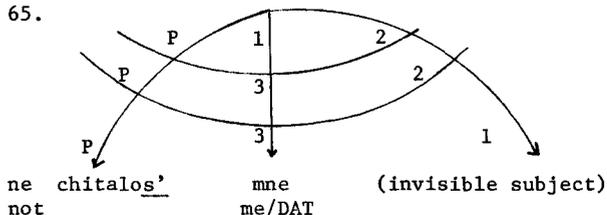


64. Mne ne chitalos'

me/DAT not read

'I could not read.' or 'I did not feel like reading.'

65.



By accepting the notion of an invisible patient existing with otherwise transitive verbs it is possible to account for the appearance of -sya in ENO 2 constructions and in sentences like 64 - 65. It also can explain why there is no overt subject in 64.

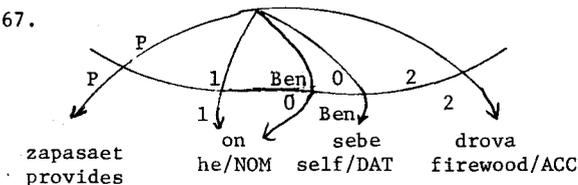
Another discernible set of sentences within the RG framework that show -sya, have the feature in common that the agent is also the benefactive.

17. 1 as Ben

This construction with -sya involves a single figure as agent and benefactive.¹⁹ There are paraphrases possible with some of these which involve the non--sya variant of the verb, a reflexive pronoun in DAT (the case for benefactives in Russian) and a nominal in ACC. The relations initially and finally for these paraphrases are 1, 2, and Ben. 66 is such a paraphrase. Network 67 shows its relations.

66. On zapasaet sebe drova
 he/NOM provides self/DAT firewood/ACC
 (Lit., 'He provides firewood for himself.')
 'He provides himself with firewood.'

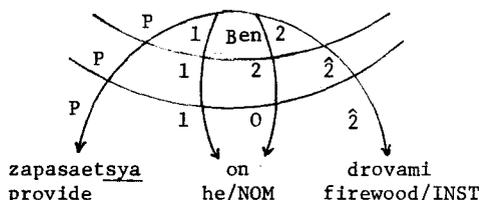
67.



In 67 it is seen how a separate nominal, the reflexive pronoun sebya, appears in the final stratum to take the benefactive relation. In the -sya construction 68, on the other hand, there is no final nominal DAT which could take this relation. Also, the patient appears as a NT. These facts require a three stage analysis. Initially there are 1, 2 and Ben relations. In the second stratum, Ben advances to 2 putting the initial 2 en chomage. This latter shows up in morphology determined by the semantics of the verb. In this case in INST (for dobivat'sya : dobit'sya 'to gain for oneself' the initial 2 appears ultimately in GEN). The second stratum has a single nominal bearing 1 and 2 arcs. Since sentences must have a final subject, the nominal must bear the 1-relation on the surface. The 2-relation can be thus said to be nullified. 69 is a network showing these developments of 68.

68. On zapasaetsya drovami
 he/NOM provides firewood/INST
 'He provides himself with firewood.'

69.



Here a problem appears with hypothesis 43. The initial 2 does not become a 1 or 0 in the final stratum. Yet the hypothesis can be revised to the following to encompass all instances of the particle thus far encountered:

43 Revised: sya appears when any 2 becomes a 1 or a 0 in the final stratum.

18. The Impersonal Intransitives

To this point in the discussion the appearance of the particle -sya has been analysed for all the constructions of which I am apprised, save one. The remaining sentence type requires observations which can be made with less assurance than was the case for the ones preceding. This is due to the nature of the verbs. Traditionally, these are intransitive because they never appear with a nominal ACC. The other sentence types, with the partial exception of the unaccusatives, had verbs which could appear in both -sya and non--sya forms, the latter always having an associated nominal ACC. Part of the initiative of this investigation came from this observation -- it seems to be a generalization of Russian syntax. Yet the four (possibly five) verbs of this category of whose existence I am aware never appear with a direct object. Because the class is so small it is tempting to treat these as exceptions, possibly as analogical extensions of the impersonal ENO 2 constructions. However, I feel this alternative to be somewhat unacceptable for several reasons. First, although the group is

small, the frequency of appearance of these forms is significant. Consider a typical greeting as in 70.

70. Kak tebe zhivyotsya?
How you/DAT lives
(Lit. 'How does it live to/for you?')
'How are you doing?' or 'How is it going?'

Second, as far as I can ascertain, native speakers do not find these forms any more irregular or imperfect than many others with -sya. Third, I think it may be possible to demonstrate that these sentences are the result of the interaction of other valid principles of the language. I will call these sentences Impersonal Intransitives (II) for reference.

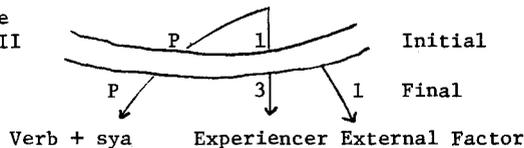
The four clearly II verbs are: zhit' 'to live'; rabotat' 'to work'; spat' 'to sleep'; and, sidet' 'to sit'.²⁰ Examples with these are found in 70 - 74.

71. Mne xorosho rabotalos'
me /DAT well worked
(Lit. 'It worked well to/for me.')
72. Ey ne spalos'
her/DAT not slept
(Lit. 'It did not sleep to/for her.')
73. Emu ne siditsya doma
him/DAT not sits at home
(Lit. 'It does not sit at home to/for him.')

These sentences describe the relationship of an action to a person. Although the central figure is intimately involved in the action, the intent of the sentences is that a factor somehow external to the person is responsible for the effect. In the final relations of the sentence, the external factor is the subject (1) and the central figure is the experiencer (3).

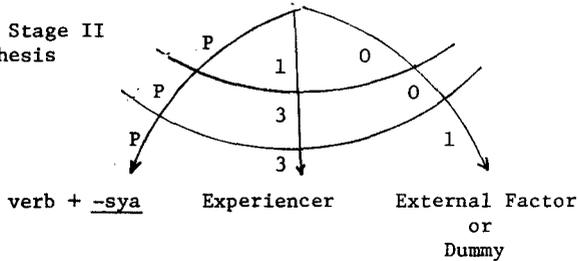
Since, in RG, experiencers are initial 1's, and since these verbs are intransitive, then there can be just the single initial relation of the person as 1. These disparate stages are shown in incomplete network 74.

74. Incomplete
Abstract II
Network



In 74 a final relation appears where there was none initially. Contemporary syntacticians would argue that a rule of dummy insertion is in effect here. A dummy is basically a null or unmarked element which serves a syntactic function in the sentence. (The patients in ENO 2 constructions are dummies.) For these sentences then, an element would be inserted to take the subject relation after the initial 1 has retreated to 3. This could perhaps be accomplished in a three stage process, as hypothesized in 75.

75. Three Stage II Hypothesis



In 75, the second stratum is without a 1, and since there is no 2 to be advanced, a dummy 1 is automatically inserted. If this is the correct process, then it stands as a counter-example to the hypothesis expressed in 43 Revised. Yet there is perhaps reason to argue that this is incorrect.

There seems to me to be an animacy principle at work, governing the behaviour of dummies. Consider the following type of sentence which is traditionally also called Impersonal. For reference I will call these Impersonal Transitives (IT).

Sentences 76 and 77 are paraphrases. 76 is a personal transitive sentence in which an element of nature, volna 'the wave', is the subject and there is a nominal ACC lodku 'the boat'.

76. Volna perevernula lodku
 wave/NOM overturned boat/ACC
 'The wave overturned the boat.'

77, the IT paraphrase of 76 has unmarked, third neuter singular agreement on the verb. In Russian, this verb agreement, without an understood neuter subject, implies the existence of an inanimate dummy. Another feature of this sentence is that the agent appears in INST, the case for l-chomeurs produced in passivization. (Greedy Patient produced chomeurs have morphology which is determined by the semantics of the verb.) The case marking for the patient is the same as in 76.

77. Volnoy perevernulo lodku
 wave/INST overturned/3.n.s. boat/ACC
 (Lit. 'It overturned the boat by the wave.')
- 'The boat was overturned by the wave.'

More research is needed on the nature of dummies in Russian to ascertain the correctness of this proposal²² but a preliminary examination indicates this to be an adequate solution.

19. Summary

It has been shown that there are perhaps ten distinct syntactic constructions in which the Russian particle -sya is found. For all of these, the particle appears when the relation of direct object (2) either becomes subject (1) or is nullified (0). The constructions are summarized in the following table:

Constructions with <u>-sya</u>	
2 → 1	2 → 0
Passive	Greedy Agent
Unaccusative	Greedy Patient
1-3 Retreat	RR
Impersonal ENO 2	ENO 2
I I (0 → 2 → 1)	1 as Ben (Ben → 2 → 0)

Several other ancillary claims have been made concerning Russian syntax:

- A: The extent of passivization with -sya is determined by two parameters:
- The Animacy Parameter, as formulated in the Animate Patient Advancement Law; and
 - The Aspect Parameter, which restricts the activity to verbs of the imperfective aspect.
- There are no exceptions to these.
- B: The verb byt' 'to be' never occurs with -sya because it has no contrasting forms: it is always imperfective and unaccusative. Since this latter quality invariably implies 2-1 Advancement, the appearance of the particle would be redundant. In this way the absence of -sya in perfective passives is explainable.
- C: There is, effectively, a middle voice in modern Russian. This is exemplified by the Greedy Agent and Patient constructions and by the short form present passive participle with the present tense of the verb byt' 'to be'.
- D: The verbs udivlyat'sya : udivit'sya 'to be amazed at' and interesovat'sya 'to be interested in' are related by the same construction (Greedy Patient) to their non--sya counterparts, despite the fact that the former takes an object in DAT while the latter takes one in INST.

- E: The verb lyubit' 'to love/like' may be syntactically related to the morphologically disparate nraivit'sya :ponraivit'sya 'to please' by a rule of 1-3 Retreat.
- F: Transitive verbs may appear without a direct object. Then, either, the action is characteristic, so a direct object cannot be specified (ENO 2) and -sya appears, or, the action itself is the focus of attention and direct object is not essential information (-sya does not appear). In the latter case, a rule of 1-3 Retreat causes the invisible 2 to advance to subject triggering unmarked agreement and the appearance of the particle -sya.
- G: There is an animacy principle operative with respect to dummy insertion. On one hand, a force of nature as 1 may be put en chômeage by an inserted dummy subject, while for intransitive impersonal sentences (with an animate figure as 3), the dummy must be inserted as a 2.

20. Conclusion

Within the framework of Relational Grammar it is possible to provide a nearly unified accounting of the appearances of the particle -sya in Russian. An either/or statement embodies the principle at work:

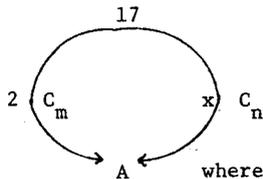
-sya appears when a 2 becomes a 1 or a 0 in the final stratum.

Paul M. Postal and David E. Johnson (MS) are developing a formalization for RG called Arc Pair Grammar.²³ The networks in this notational variant do not have horizontal lines marking strata. Each nominal instead bears a separate arc in each stratum. In this way, any arc bears only one relation.

The above statement can be formalized within the notation of Arc Pair Grammar in the following manner:

21. Formal Hypothesis

-sya appears in:



where:

- 17 = numerical clause referent (chosen at random)
- A = a dependent of clause 17
- C - stratum
- m = any non-Final stratum
- n = final stratum
- x = 1 or 0

Footnotes

¹The abbreviations used are: NOM, nominative; ACC, accusative; DAT, dative; GEN, genitive; LOC, locative or prepositional; INST, instrumental; P, predicate; and 3.s.n, third singular neuter.

²The particle will always be underlined wherever it appears. This is not done in Russian orthography.

When suffixed to a verbal constituent ending in a vowel, apocope reduces -sya to -s'.

The gloss of the verb in lb, 'builds', might more appropriately be 'is being built'. Since, however, English translations of verbs with -sya vary highly, I feel it is more informative to gloss these verbs with the simple English meaning. This better illustrates the power of -sya. I also gloss nouns (where case is marked) with the simple English nominative/accusative form.

³This is a universal principle called The Stratal Uniqueness Law (Perlmutter and Aissen (1976)).

⁴The Final 1 Law (ibid.)

⁵Although this form of the verb is used in modern Russian, the non-sya counterpart, pol'zovat' 'to treat', is obsolete.

At least two other verbs occur with -sya and a nominal in INST:
gordit'sya = to be proud of
lyubovat'sya = to admire

These were not included in list 17 because they have no non-sya form. This characteristic precludes them from the sort of synchronic discussion being conducted here.

⁶Although -sya can be described as the reflexive morphology, the particle does not appear simply because a single nominal bears 1 and 2 relations. It is also possible in some cases that this duality would trigger the insertion of the reflexive pronoun sebya. For example:

On ne kritikuet sebya
he/NOM not criticizes self/ACC
'He does not criticize himself.'

I state the condition in this fashion to simplify the presentation and delay the introduction of a necessary concept until the discussion later of reflexives. Actually, to be correct, networks 27, 29, and 34 should show a third stratum in which the 2-relation is nullified (becomes 0) in deference to the requisite final subject (Final 1 Law).

⁷This condition is possibly a result of the fact that these verbs

involve an attitude more than an action. In one dictionary (A. I. Smirnitsky (1971)) there are at least four other attitude-verbs which have no -sya form listed:

nenavidet'	= to hate
bogotvorit'	= to idolize
prezirat' : prezret'	= to despise
pochitat'	= to honour

Two other attitude verbs readily come to mind:

lyubovat'sya	= to admire
gordit'sya	= to be proud of
nraivit'sya : ponraivit'sya	= to please'

Yet these cannot be used as a basis for a counterargument since they are without -sya forms. Indeed, it could be argued that another middle voice construction, Greedy Patient, is responsible for this characteristic and thus the basis for the original claim would be strengthened.

⁸William D. O'Grady introduced this term to me along with some of its semantic implications. This was a major impetus to the development of the notion of Greedy Patient.

⁹At this point, the reanalysis of the verbs in list 17 seems to make certain aspects of the APA Law redundant. However, in the discussion later of the unaccusatives the law needs to be as powerful as stated.

¹⁰It is often thought that reciprocal verbs cannot appear with a final singular subject. This is because the subject must consist (in some logical sense) of at least two individuals who act upon each other. However, there is a rule of comitative float in Russian which can apply to a multiple (conjunct) subject after the reciprocal morphology has been triggered. In the examples A, B, and C, A shows a simple ergative construction, B is the reciprocal paraphrase and C is the latter after 'comitative float'.

A. Anna i Boris vstrechali drug druga
Anna and Boris/NOM used to meet each other/ACC
'Anna and Boris used to meet each other.'

B. Anna i Boris vstrechalis'
Anna and Boris/NOM used to meet
'Anna and Boris used to meet (each other).'

C. Anna s Borisom vstrechalis'
Anna/NOM with Boris/INST used to meet
'Anna used to meet with Boris.'

The rule of Comitative float has an interesting side effect in Russian. First and second person singular pronouns become plural after the comitative element has floated. Thus ya, first singular pronoun, in D becomes my, first plural pronoun in E.

D. Ya i Anna ochen' lyubim etogo pisatelya
I and Anna/NOM very love this writer/ACC
'Anna and I like this writer very much.'

E. My s Annoy ochen' lyubim etogo pisatelya
we/NOM with Anna/INST very love this writer/ACC
'Ann and I like this writer very much.'

Terry Klokeid (personal communication) also informs me that this side effect occurs in other languages, Spanish and Nitinaht among them.

¹¹There is a verb which has the form a non-sya imperfective would appear in if such a form were to exist. However sadit' 'to plant' is likely related to sad 'garden' and not to sadit'sya 'to be sitting'.

¹²zhit' 'to live' does actually appear with -sya. This appearance is not related to the unaccusative nature of the verb but rather to its occurrence in the Impersonal Intransitive construction. This will be discussed later.

¹³Sentence F is a more literary paraphrase of the participial passive G. The verbs in both are existential-equational unaccusatives, the former coming from group one where there is a four way contrast and the latter (byt' 'to be') from the group with no contrast.

F. Dver' yavilas' otkryta vetrom
door/NOM was opened wind/INST
'The door was opened by the wind.'

G. Dver' byla otkryta vetrom
door/NOM was opened wind/INST
'The door was opened by the wind.'

¹⁴I think this condition needs to be this strong in applying to all unaccusatives rather than just to the existential-equational ones because of the existence of other unaccusative verbs which appear in no other type of construction. For example, tayat' : rastayat' 'to melt'. As would be expected, these can also be used as unaccusatives and then -sya appears:

Ergative - 'to melt'

plavit' - - -
rasplavlyat' rasplavit'
smyagchat' smyagchit'

Unaccusative - 'to melt'

plavit'sya - - -
rasplavlyat'sya rasplavit'sya
smyagchat'sya smyagchit'sya

The last on the list means 'to melt' only figuratively. Otherwise it means 'to soften/assuage/mollify'. In its original sense the above principles are still valid.

¹⁵Less controversial examples are available. Compare the -sya and non-sya versions in H and I of the verb xotet' : zaxotet' 'to want'.

H. Ya xochu pet'
I/NOM want to sing
'I want to sing.'

I. Mne xochetsya pet'
Me/DAT wants to sing
(Lit. 'It wants to/for me to sing.')

'I feel like singing.'

¹⁶It is not entirely outlandish to consider lyubit' 'to love' and nraivit'sya - ponraivit'sya 'to please' as reflexes of the same verb. Although they are formed from different roots several aspect pairs exist which are also from different roots. I. Pulkina and E. Zakhava-Nekrasova (1960) offer the following list (p. 325):

govorit'	- skazat'	= to speak - to say
brat'	- vzyat'	= to take, to borrow
klast'	- polozhit'	= to put
lovit'	- poymat'	= to catch
iskat'	- nayti	= to look for - to find

Also, although lyubit' and nraivit'sya - ponraivit'sya are different semantically, there are meaning differences in the first and last of the aspect pairs above. If aspect can bring a slight modification of semantics, why cannot 1-3 Retreat?

A final comment on these verbs has to do with a universal syntactic process called Causative Clause Union. There are initially two clauses: the upstairs (matrix) containing a causal verb (this may be abstract or even an incorporated element like aya or paya in Sanskrit) and the downstairs (embedded) clause which contains the main action. When these clauses are united into one the initial downstairs 1 becomes a 3 in the resultant single clause. (See Perlmutter and Aisen (1976) for a description of clause union in Spanish.) It seems possible to me to reanalyze nraivit'sya 'to please' as 'to cause to like' thus relating it more closely to lyubit' 'to like/love'.

¹⁷Although Vil'gel'minina has correctly separated this construction from others, she/he confuses among these the unaccusative verb in J.

J. Krapivy zhzhlyotsya
nettles/NOM burn
'Nettles sting.'

This action is characteristic of nettles but they are not the agent here. That unaccusative patients can have a characteristic action is perhaps more clearly seen in sentences like, 'Wood burns', 'Ice melts', 'Paper folds', 'Snow drifts', 'Ships sink', or 'Hot knives cut plastic like butter'.

¹⁸-sya does not appear for this invisible direct object because the 2-relation has not been nullified. Here the final 2 can still advance to

1 (as in 65) whereas it cannot in the ENO 2 constructions.

¹⁹Other verbs which show a 1 as Ben construction with -sya are:

dobivat' <u>sya</u>	-	dobit' <u>sya</u>	=	to gain for oneself
stroit' <u>sya</u>	-	postroit' <u>sya</u>	=	to build for oneself
sobirat' <u>sya</u>	-	sobrat' <u>sya</u>	=	to make oneself ready (possibly reflexive)
ukladyvat' <u>sya</u>	-	ulozhit' <u>sya</u>	=	to manage/pack for oneself

²⁰It is possible that a fifth verb, nezdorovit'sya, be added to this. But since it has no non-sya form, it is more difficult to show the actual activity of -sya.

²¹This restriction may somehow be related to the APA law.

²²Of particular interest in this regard is the relatedness of sentences like K and L:

K. Ona xolodna
she/NOM (is) cold
'She is cold (personality-wise).'

L. Ey xolodno
she/DAT (is) cold
(Lit. 'It is cold to/for her.')

'She feels cold.' (i.e. It's forty below.)

²³This formal notation is exemplified in Postal and Pullum (1978) in their solution to the English 'want to', 'wanna' contraction problem.

References

- Harrison, W. 1967. Expression of the Passive Voice, in *Studies in the Modern Russian Language* 4.
- Launer, Michael K. 1974. *Elementary Russian Syntax*. Cambridge, Massachusetts: Slavica Publishers, Inc.
- Perlmutter, David M. and Judith Aissen. 1976. Clause Reduction in Spanish, in *Berkeley Linguistics Society* 2.
- Postal, Paul M. and David E. Johnson. 1977. *Arc Pair Grammar*. Unpublished MS.
- _____ and G. K. Pullum. 1968. Traces and the Description of English Complementizer Contraction, *Linguistic Inquiry* Vol. 9, No. 1.
- Pulkina, I. and E. Zakhava-Nekrasova. 1960. *Russian*, (A Practical Grammar with Exercises), (trans. V. Korotky). Moscow: Progress Publishers.
- Smirnitky, A. I., et al. 1971. *Russian-English Dictionary*. Moscow: Soviet Encyclopaedia Publishing House.
- Townsend, Charles E. 1967. Voice and Verbs in -sja, *The Slavic and East European Journal*, Vol. XI, No. 2., pp. 196-203.
- Vil'gel'minina, A. A. 1963. *The Russian Verb*, (trans. V. Korotky), Moscow: Foreign Languages Publishing House.

Causes of Rapid Phonological Change:
The Case of Atsina and Its Relatives

David H. Pentland

1.1 Causes of Change

The cause of change has always been one of the great unanswered questions of linguistics. It is easy enough to describe the effects of a particular change, but the theories that have been advanced to account for the change's arising in the first place range from the laughable to the merely inadequate.

Istvan Fodor (1965) suggests a distinction between internal and external factors. Internal causes of change are the "inherent laws" of a language which cause it to change in a particular way. Fodor observes (15) that the nature of such laws has not been elucidated; nor can it be -- the question is circular: Language X has changed in a certain manner because it was the inherent tendency of that language to do so.

Among the external factors examined by Fodor are the effects of history, culture, society, geography, neighbouring peoples, and the national character. Some of these are undoubtedly major conditioners of phonological and other linguistic change, but others are merely coincidental and unrelated to linguistic developments.

1.2.1 Complexity

Fodor (1965:18) states the following as a law: the number of the elements of the system is in inverse ratio to the measure of its stability. In other words, systems with large numbers of components (e.g. the morphological system) should change more readily than one with few components, like the phonological system. This is contradicted by the history of Arapaho-Atsina: the drastic changes in the phonological system are outlined in section 2, but there has not been any large-scale reshaping of the morphology. If a rule must be formulated, I would suggest the converse: a system resists change in direct ratio to its complexity, since each element in a complex system (such as an Algonquian transitive verb paradigm) tends to support the others. However, this is little more than the statement of an observed tendency, having nothing to do with causality: it predicts what will change, not why it will change.

1.2.2 History and Culture

In a number of languages, major linguistic changes have coincided with important historical events or the introduction of new cultural items. According to Fodor (1965:22), "all linguistic changes of a greater size may be connected with a historical upheaval of great importance, but one cannot always find significant linguistic alternations after all great historical transformations"; however, he claims (23-26) that events that increase "the cultural level of the people", such as the adoption of a writing system, a

new religion, or advances in transport and communication, tend to impede linguistic change, perhaps after having caused a brief period of rapid development. In place of his two variables, I substitute one, "cultural conservatism": linguistic changes will tend to occur at the same rate as innovations in other parts of a society's culture.

1.2.3 Society

Under the heading of social effects Fodor (1965:29) mentions, only to reject, a causal connection between social and linguistic change, the theory promoted by the Soviet linguist Marr. He suggests (30) that increasing urbanization slows down change by making the linguistic norm accessible to a larger percentage of the population.

1.2.4 Geography

Fodor groups three variables as part of the effects of geography: the density of population; the degree of geographic isolation; and a supposed difference between newly-settled areas and the homeland. He also includes density of population as a social effect (1.13), since urbanization inevitably implies increased concentrations of people. I doubt that density in itself is a factor that predictably affects the rate of linguistic change: a dense population enjoys better communications among its members than a sparse one; should it then resist or accept rapidly disseminated innovations?

Fodor claims (1965:32) that "the more geographically isolated a people is, the less its language reveals changes", citing Basque and the Caucasian languages as examples. I am not aware of any evidence that these languages are more conservative than their neighbours; on the contrary, a language cut off from its near relatives may change more rapidly than the norm, since it lacks the levelling and retarding influences related dialects have on each other.

I do not see why living in an area previously not inhabited by members of a particular language group should have any effect other than requiring a few new lexical items to cover concepts not encountered in the homeland.

1.2.5 Foreign Influences

It has long been recognized that the assimilation of foreign groups into a culture, whether at a high or low status level, may influence the language of the host nation. Fodor concludes, however, that it is impossible to measure the effect of such foreign influences (1965:34-35). I would divide his variable into two: areal influences, quantifiable in terms of the degree of uniformity among neighbouring languages, and the effect of diglossia, whether in the form of two closely related languages or dialects, or of more distantly related (or unrelated) languages, measurable in part in terms of the percentage of bilinguals in the population.

1.2.6 National Character

The last variable Fodor considers (1965:35-40) is "the role of national character ("Volksseele")". He suggests a distinction between "the extrovert national character of the southern type (Italian, Spanish) and the introvert character of the northern type (English, Scandinavian)", expecting that "the more communicative peoples of more vivacious life rhythm" will experience a more rapid rate of change.

Research into this variable is fascinating, but completely unrewarding. The introverted Vikings who conquered Normandy and Sicily underwent a series of linguistic changes which led to the submergence of their language in the face of a larger (and more extroverted) substratum; their equally introverted cousins who settled Iceland, on the other hand, have (as Fodor predicts) been remarkably conservative. A comparison of the rates of change in the dialects of Ottawa and Los Angeles should provide useful data concerning this factor.

1.3 Factors to be Considered

Of Fodor's six external variables, only "culture" (in the form "degree of cultural conservatism") and "foreign influences" (divided into "areal influences" and "diglossia") strike me as fruitful areas of research. I would separate out "literacy" as an independent variable from the cultural factor, and add "population size" and "degree of fragmentation" (presumably part of his geographic variable) as others worthy of consideration. In sections 2 to 4 these factors will be examined in relation to the phonological changes that have taken place during the recorded history of several languages. My tentative conclusions are presented in section 5.

2. Algonquian Languages of the Great Plains Area

2.1 Algonquian Subgroups

At the time of first contact there were about forty named political groups speaking Algonquian languages. Less than a dozen are still spoken by any considerable number of people, and at least twenty have died out, often with little record of what they were like.

There have been a number of attempts to set up subgroups within the Algonquian family. Truman Michelson (1921) suggested four divisions:

1. Arapaho, including Besawunena, Atsina, Nawathinehena and Ha[?]anahawunena
2. Blackfoot
3. Cheyenne (and Sutaio)
4. All the rest.

He later retracted his statements, having proven (Michelson 1935) that the divergent character of the Plains languages was due to recent sound changes, not early splits from the rest of the family. His revised opinion is reflected in Leonard Bloomfield's statement (1946:85) that the reconstruction

of Proto-Algonquian "will, in the main, fit all the languages". Regrettably Bloomfield also quoted the earlier classification, which is therefore still cited by archaeologists, historians, and others on occasion.

Bloomfield's reconstruction was based on four languages spoken in the Great Lakes area; he therefore referred to it as Proto (or Primitive) Central Algonquian, since in 1925 he had no way of knowing whether it would account for the other members of the family. Even after it had been shown, by Michelson (1935: cf. above) and Frank Siebert (1941) among others that "PCA" was indistinguishable from Proto-Algonquian, some linguists, notably Charles Hockett, retained the "Central" label. There are no innovations shared by Cree, Fox, Menomini and Ojibwa to justify setting up a Central subgroup of Algonquian: this was demonstrated to Hockett's satisfaction at a 1964 conference and he has withdrawn his support for "PCA".

At the same conference, Ives Goddard presented a reconstruction of part of the verb paradigm (Goddard 1976b), showing that all the languages on the Atlantic coast shared a series of innovations in the inflection of transitive inanimate verbs. Various phonological and lexical innovations have also been claimed for Proto Eastern Algonquian, but I have shown elsewhere (Pentland 1979a) that all the proposed markers of Eastern Algonquian either are not unique to the subgroup or are not found in all the member languages.¹ There are thus no established subdivisions within the Algonquian family; it is convenient, however, to refer to Plains, Central and Eastern languages when discussing features due to areal diffusion.

2.2 Developments in Non-Plains Languages²

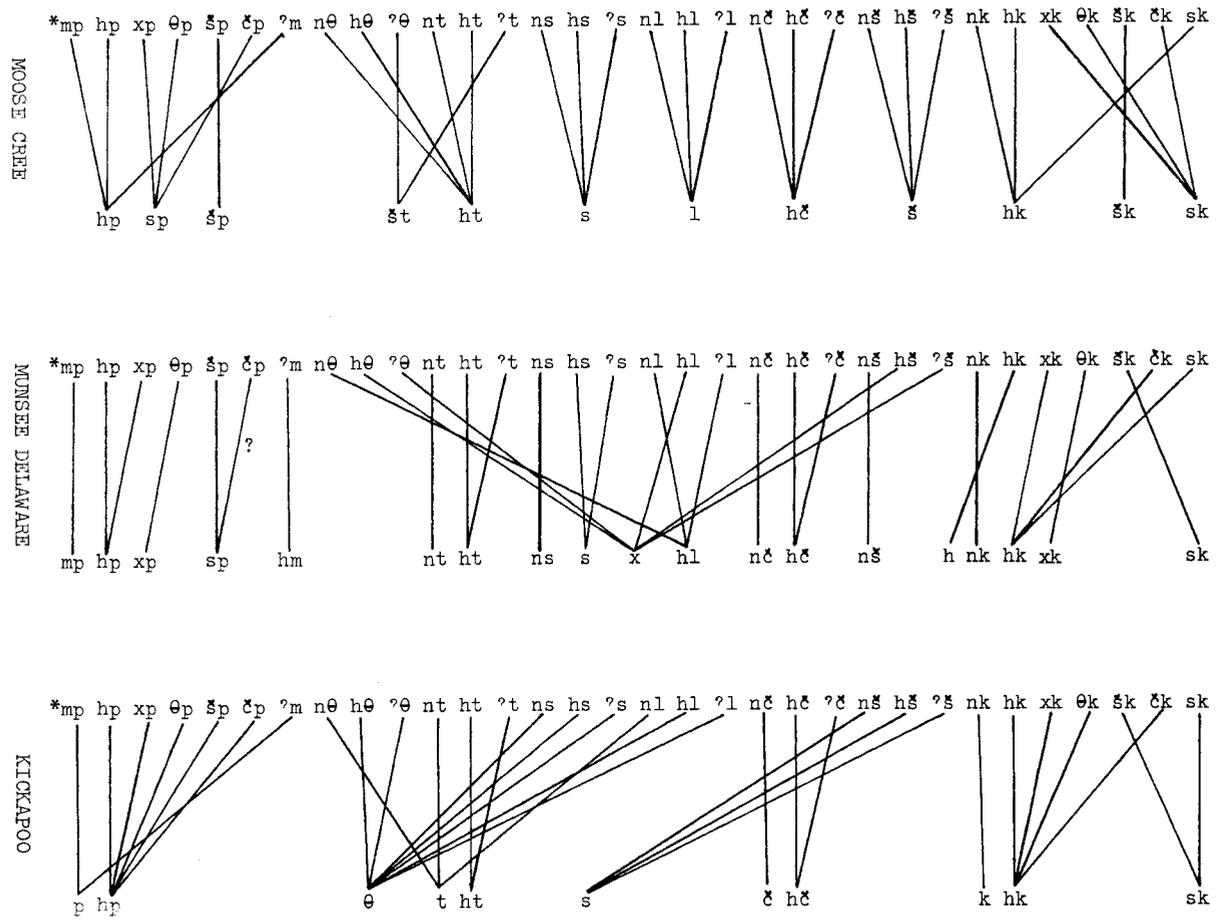
Most Algonquian languages have simple histories as far as changes to single segments are concerned. Proto-Algonquian had the following consonants and vowels: *p t č k θ l s š h m n w y a ā e ē i ī o ō. Cree (Moose dialect) has merged *θ with *t and short *e with *i; Munsee Delaware has l < *θ and *l, and has lost the length contrast with high vowels; Miami has merged *θ with *l but retains all other segments. Modern Kickapoo has gone a little further, but there are still no very startling changes: *θ, *l > n, *s > θ, and *š > s. In many cases it is possible to reconstruct a lengthy Proto-Algonquian word with some degree of assurance from a single cognate.

The main changes in the phonological systems of the daughter languages take place among the consonant clusters. No language maintains a contrast between all 32 of the clusters reconstructed in Proto-Algonquian -- there are extensive mergers in each language, but no two have exactly the same results. The developments in three languages -- the Moose dialect of Cree, Munsee Delaware, and Kickapoo -- are illustrated in Table 1.³

2.3 The Plains Languages

Arapaho, Besawunena, Atsina, Nawathinehena and Ha[?]anahawunena are often referred to as dialects of a single language, but this is not strictly correct (though the cover term "Arapahoan" will occasionally be used in this study). Besawunena does appear to have been only dialectally different from Arapaho; Atsina is sufficiently different to cause problems in communication

TABLE 1. Mergers of Proto-Algonquian Consonant Clusters.



(Salzmann 1960:40); while Nawathinehena was probably unintelligible to speakers of the other languages. Ha'anahawunena became extinct before it could be recorded, but is said to be the most different from Arapaho (Kroeber 1916:74).

The earliest confirmed location of the Atsina was in central Saskatchewan in the late 1700s. The Arapaho (and presumably the other Arapahoan groups) were somewhere south of them, probably across the Missouri River in eastern Montana, but they were not contacted until the early nineteenth century. The Blackfoot were apparently early arrivals on the plains, but the archaeological evidence is inconclusive (Forbis 1968:43-44). The Cheyenne were historically horticulturalists living in earth-lodge villages at the edge of the plains; they became mounted buffalo-hunters only in the second half of the eighteenth century (Swanton 1930).

Compared to the central and eastern Algonquian languages, those spoken in the central plains area show the results of rapid and drastic phonological change. My main interest is in the history of Atsina and its close relatives, since they alone are attested in a string of vocabularies recorded at about 30-year intervals over more than two centuries.⁴

The documentation is far from ideal: for Nawathinehena we have a total of 67 forms (including variants), all that Kroeber (1916) was able to obtain. The Besawunena corpus contains 75 forms, also collected by Kroeber; as it is clearly very similar to Arapaho it is ignored in the present study. Of Ha'anahawunena there is not a single word. This is especially regrettable in the light of Indian statements that it was intermediate between Arapaho and Blackfoot (Kroeber 1916:74). Vocabularies of Arapaho begin to appear in the 1840s; it is the best attested language of the group, but the Atsina records cover a longer period.

2.4 Early Sound Changes

2.4.1 Initial *i

Bloomfield's reconstruction of Proto-Algonquian has *e, never *i, in the first syllable of words. In most of the daughter languages west of the Allegheny Mountains only *i occurs initially, only *e after a consonant, thus *elenyiwa 'man' vs *nepyi 'water': Ar inén, néč; At inín, nec (K); Nw iten, nec; Ch hetane, mahpe; cf. Fox ineniwa, nepi, Shawnee ileni, nepi.

2.4.2 *wa, *ya

The Plains languages have generalized an old rule (from Proto-Algonquian?) by which *a in the suffixes *-aki 'animate plural', *-ali '(animate) obviative singular; inanimate plural', and *-ahi '(animate) obviative plural' becomes *ō after postconsonantal *w, *ē after postconsonantal *y. In Arapaho, Atsina and Cheyenne (no Nawathinehena forms were recorded) *yē later becomes *ī (> Ar, At ii/uu, Ch e) as in Ojibwa, e.g. *ameŋkw-a, -aki 'beaver(s)' > Ar At ébes, ébesi, Ch hóma'e, homá'ne; *ečy-i, -ali 'feces' > Ar biihíθ, biihíθii 'buffalo chip', At biihíci

(pl.) 'manure', Ch hemáhkáse, hemáhkáséstse 'buffalo chip'.

2.4.3 Clusters with *-θ, *-l

Of all the Proto-Algonquian consonant clusters those ending in *-θ and *-l are the most unstable: there are unexplained alternations between *θ and *l everywhere, and a strong tendency to merge these clusters with those ending in *-s or *-š. Except in Cree-Montagnais there is at least partial merger in every language, probably the result of the diffusion of rules across language boundaries from several innovating centres.

Arapaho and Atsina generally keep *-θ distinct from *-l, as does Blackfoot, but in the first two *-θ in consonant clusters merges with *-š, *-l with *-s, while in Blackfoot *-θ becomes *-s, *-l becomes *-š. In Cheyenne and Nawathinehena *-θ and *-l both become *-s in clusters. In Cheyenne a nasal is lost before another consonant: *nθ therefore develops the same as intervocalic *θ. However, *nl has the same reflex as *ns (rather than intervocalic *l), showing that the two rules must have overlapped. Arapaho and Atsina occasionally show a reflex of *ʔš rather than *ʔs from *ʔl, while there are more than a few problems in sorting out the Blackfoot evidence. The complicated and sometimes incomplete mergers point to diffusion of the assibilation rule rather than an inheritance from Proto-Algonquian. Since the rule is so widespread, it must have begun to spread very early, long before the Algonquians reached the plains.

Proto-Algonquian *nθ becomes *ʔx in Arapaho-Atsina (later Ar s/x, At θ/s, with compensatory lengthening of a preceding short vowel), but *θ (> t) in Cheyenne: *mānθehsi 'flint, flint knife' > Ar wóoxé, At wóoθo, Ch mota (archaic; modern motšéške). There are no cognates in the Arapahoan languages, but *nl becomes *(n)s (>h) in Cheyenne: *newīnla 'I name him' > Ch naveho. The cluster *ʔθ also becomes *ʔx in Arapaho-Atsina, but *ʔs in Cheyenne (>ʔh/ʔn) and Nawathinehena (>hʔ), e.g. *neʔθ- 'three' > Ar nééso, At néeθ, Nw nahʔah(a)ʔ (nahahaʔ K), Ch naʔhe. In Arapaho-Atsina *h is lost before consonants, but not before it has conditioned the change of *hθ to *hx (>Ar s/x, At θ/s); in Cheyenne and Nawathinehena *hθ becomes *hs (>Ch h/hn, Nw hʔ): *metātahθenwi 'ten' > Ar béteetox, At bétootos, Nw matātah(e)ʔen (maxtoxtahähāⁿ K), Ch máhtóhto^ha. The other attested cluster is *ʔl, which becomes *ʔs in all the southern Plains languages (later Ar, At, Nw hʔ, Ch ʔh/ʔn), e.g. *pemiʔlē- 'to fly along' > Ar ceebíhʔoxt, Ch e-ameʔha 'he flies along'. However, in the same morpheme, *-ʔlē- 'to fly; bird', Arapaho and Atsina also have a reflex xʔ, which shows the metathesis of *ʔh < *ʔs < *ʔl but the x of *ʔx < *ʔθ: *māskiʔlēwa 'magpie' > Ar wooʔúxʔei (sic? wouxei K), Nw māʔtihʔēn (mouxtiāⁿ K), Ch moʔéʔna.

2.4.4 Single *θ, *l

Interacting with the changes of 2.4.3 are the developments of Proto-Algonquian *θ and *l outside consonant clusters (i.e. initially and intervocalically).⁵ While I will continue to write "θ", I am convinced that it must have been a lateral (probably voiceless *t̥) in the light of the subsequent changes.

At a very early stage in the breakup of Proto-Algonquian, a peripheral group of languages which included (Pre-) Cree-Montagnais, Blackfoot, Cheyenne, Nawathinehena, Arapaho-Atsina and Powhatan developed a flap pronunciation of *θ, i.e. voiceless lenis [t̪], as in Canadian English writer, metal. In Cree-Montagnais and Blackfoot t̪ fell together with ordinary t < *t. Nawathinehena and Cheyenne continue to maintain a contrast between t̪ and t -- the former is unaspirated, the latter [ht]. By the time of our first records, Atsina had the reflexes tθ, ts, and t; Arapaho has θ.

In Blackfoot, Cheyenne and Nawathinehena, Proto-Algonquian *l merged with *θ as t̪ (> t); this is also the stage reached by Powhatan. Arapaho-Atsina, together with Swampy Cree, the Saulteaux dialect of Ojibwa, Massachusetts-Cowesit and other languages,⁶ underwent another very early change, that of *l to n, thus merging with *n. Compare the reflexes of *aθemwa 'dog' and *elenyiwa 'man': Ar éθ, inén; At ót̪ (<ótt̪), inín; Nw it̪en, aṭam; Ch hótamé, hetané; Bl imitá (metathesized, as often in Bl), nit- 'ordinary' (< elen-, metathesized); Swampy Cree atim, ininiw; Ojibwa anim, inini; Massachusetts aném, nín; Powhatan aṭəmohs (attemous).

2.4.5 Vowels and Semivowels

In proto-Algonquian the semivowels *w and *y occur before all vowels except *ō.⁷ In the eastern languages *wV is usually maintained, but *y is lost after a consonant. The central languages merge all the combinations of postconsonantal *y plus short vowel with *i; postconsonantal *w plus short vowel usually becomes *o.

The Plains languages also merge postconsonantal *yV with *i, but only *we and *wi become *o - *wa remains except in Cheyenne (where it too yields *o). The changes in the Arapahoan languages are reminiscent of Cree, which also maintains *wa but has i, o from the other combinations, but this is probably a coincidence. Compare the underlined vowels in the following cognate sets (by a later rule Arapahoan has i, Cheyenne e < *o): *mehkwepyathekwi 'metal' Ar bé?iç̣iθe?, At be?ic̣ite? (bet'-ste Hayden 1863, beitsit K), Nw meh(i)?ic̣ite (mähi'itsitā K), Ch ma?(k)æta (dissimilation?); *wemaskōswa?θemwa 'elk-dog = horse' > Ar iwōxuuhōox, At iwōsiihōóθ, Nw ma?sūtih'em (masoutihem K), Ch mo?(k)éhēno?ha (-no- unexplained); *nekwi?sa 'my son' > Ar neih?e, At neih?e, Nw nei?teh? (neictā' K), Ch nae?ha.

Postconsonantal semivowels are lost before long high vowels in all the Plains languages. Arapaho and Atsina maintain *wē, *yē, but in Cheyenne and Nawathinehena *wē becomes *I, and in Cheyenne *yē does as well, as in Menomini: *eθkwēwa 'woman' > Ar isei, At iθee, Nw ih(i)?i, Ch hé?e, cf. Menomini netēhkī?sēshem 'my girl'; *nyēw- 'four' > Ar yéin, At yéén, Nw niābah(a)?, Ch neva. Nawathinehena shows the effects of overlapping rules: while it has iā (< iē by vowel harmony) in 'four', *yē becomes *I in *myēhkani 'road' > Nw mih(i)?an (mihiaⁿ K), Ch meonótse (pl.); Ar bóóó, At b'óóó have recent vowel harmony.

2.5 The Great Plains Sound Shifts.

The changes described in 2.4 took place at an indefinitely early

time in the history of the Plains languages, probably while all the Algonquian peoples were still in a fairly compact area around the lower Great Lakes. The rules could then have spread readily through languages which were not yet very different from each other. No doubt other rules diffused so thoroughly that their results are attributed to Proto-Algonquian itself, e.g. the palatalization of *t to *č before *I, *y, and the confusion of *θ and *l mentioned in 2.4.3. The remaining rules are of a different sort: most of them are unrelated to changes in non-Plains languages, and their cumulative effect is to make the Plains group look completely un-Algonquian.

2.5.1 Consonant Clusters

Every Algonquian language has its own distinctive treatment of the Proto-Algonquian consonant clusters. In Cheyenne preconsonantal *n- and *h- were lost (after the changes of 2.4.3); all other consonants (*ʔ-, *x-, *θ-, *s-, *š- and *č-) became glottal stops. In Nawathinehena preconsonantal *š- becomes (?)š-, *s- becomes (?)s- (> ?t-), and all other consonants become ?- (or ?h-, depending on how the development of postconsonantal *k is described). In Blackfoot, Proto-Algonquian *ʔ- remains, while all other attested first members of consonant clusters become x-. Arapaho-Atsina (at this stage still a single language) drops *h- (after the changes of 2.4.3), and changes preconsonantal *š-, *θ-, *č- to x-, all other consonants to glottal stop. The developments are summarized in Table 2.

PA	Ar-At	Nw	Bl	Ch
*š-	x-	(?)š-	x-	?-
*θ	x-	?h-	x-	?-
*č-	x-			?-
*h-	-	?h-	x-	-
*n-	?-	?h-	x-	-
*ʔ-	?-	?h-	?-	?-
*x-	?-	?h-	x-	?-
*s-	?-	(?)s-	x-	?-

Table 2. Plains Algonquian Reflexes of the First Members of Consonant Clusters.

2.5.2 Vowel Shifts

While the changes in consonant clusters appear drastic, the same sort of development was going on in every Algonquian language. Speakers of one language quickly learn the major correspondences of others that they encounter, and may even attempt to switch languages (for reasons of prestige, etc.) by applying their knowledge (cf. Wolfart 1973). Thus the developments of 2.5.1 would not have made the Plains languages completely unintelligible to speakers of Fox and the other central languages.

What does make Cheyenne and the Arapahoan languages look very

different is the fronting of all high vowels: Proto-Algonquian * \bar{o} becomes * \bar{i} , e.g. * $\bar{m}\bar{o}$ swa 'moose', diminutive * $\bar{m}\bar{o}$ swehsa (> * $\bar{m}\bar{o}$ sohsa by 2.4.5) > Ar bii, bihihi? 'buffalo cow', At \bar{b}^{\prime} iih 'id.', Nw mi*ti*h(i)? (mixtihi K) 'deer', Ch méhe 'buffalo cow'.**

In Arapaho-Atsina the semivowel *w also merged with *y, but Cheyenne keeps the two apart (as v and t); as often, Nawathinehena shows both treatments, with w in initial position (like Cheyenne), i after consonants (cf. Arapaho-Atsina y), and both b (=w? -cf. Cheyenne [β]) and n (like Arapaho-Atsina) intervocalically: *wāp- 'white' > Ar, At nook-, Nw wāk-(wanātsiāⁿ K), Ch vohp-; *ne[?]θwātah- 'eight' > Ar nées(y)ootox, At néeθ(y)ootos (postconsonantal *y is later lost in Arapaho and Atsina, after conditioning the front-vowel alternant of the preceding consonant), Nw neh[?]iāteh(e)[?]en (nexiotāhāhāⁿ K), Ch na[?]nóhtoha; *nyēwi/*nyēwahθwi/*nyēweni 'four' > Ar yéin, At yéen, Nw niābah(a)?, Ch neva; *mewatayi 'someone's belly' > Ar, At wonót, Nw manatan (monoxtaⁿ K).

2.5.3 Developments of *s

A second change which did nothing to improve intelligibility between the Plains and non-Plains languages was the shift of *-s in consonant clusters to -h, elsewhere to h (Cheyenne, Arapaho-Atsina) or t (Nawathinehena): *sātwiya 'cottonwood, tree' > Ar ohóót, At ohóót[?], Nw atāt (hoxtotx K), Ch hóhtete.

The cluster *[?]h (< *[?]s etc.) metathesized in Arapaho-Atsina and Nawathinehena, but not Cheyenne, to h[?]. In initial position in Arapaho-Atsina h < *s fell together with *y; except after a consonant *y then becomes n. An example of n < *y < *w was given in 2.5.2; for n < *y, cf. *yāpēwa 'male (of large animal)' > Ar, At enéécee, Ch hotóa[?]a (Nw hitāⁿmōⁿ K is either not cognate or a loan from Ch); for initial n < *s, cf. *sakimēwa 'mosquito' > Ar nóúbee, Ch hóoma.

2.5.4 The *k > \emptyset , *p > k Chain

The final part of the Great Plains Sound Shift is a push-pull chain whereby *k becomes \emptyset and *p becomes k in Arapaho-Atsina and Nawathinehena. Goddard (1974:107) has suggested that this change be considered part of a "delabialization" process together with *w > *y, though there does not seem to be any way of writing a single rule; he adds "to the extent that contemporary theory is unable to specify a common principle in the changes *w > *y (~*n) and *p > *k it seems likely to be deficient."

The loss of *k, by far the most common consonant in Proto-Algonquian, and the shift of *p to k dealt the final blow to intelligibility between Arapahoan and the other languages. In Cheyenne *p and *k were not lost completely, becoming hp and hk (cf. *t>ht), later hp ~ \emptyset , hk~n~ \emptyset under unknown conditions. Cf. *mexkenāhkwa 'turtle' > Ar be[?]énoo, At bé[?]énoow, Nw mah[?]enāh(a)? (ma'ānaⁿhāⁿ K), Ch ma[?]eno, pl. ma[?]enone; *kiso[?]θ- 'sun' > Ar iisis, At iisis, Nw is*ih*(i)[?]en (hīcihiāⁿ K), Ch esé[?]he; *wāposwa 'rabbit' > nooku, At nóókóóóc (suffix[?]), Nw mākut; *éipayaki 'ghosts' (pl.) > Ar θiikono[?], At ciikóno, Ch seoto.

2.6 Later Prehistoric Changes in Arapahoan

Compared with what has already been described, the later changes in Arapaho-Atsina and Nawathinehena are trivial. Proto-Algonquian *θ by this time had passed from t to an affricate, c or č in Arapaho-Atsina, thus merging with Proto-Algonquian *č. Before a consonant cluster Arapaho-Atsina shortened long vowels, e.g. *awansehsa 'child' > Ar, At on^hʔe; subsequently a preconsonantal glottal stop is lost with compensatory lengthening of a preceding short vowel: *neʔθa 'my husband' > Ar néés, At néés. These changes did not occur in Nawathinehena.

All the Arapahoan languages have rules of vowel harmony, but the conditions have not been worked out even for Arapaho, which is the only language in the group still spoken. Some cases of vowel harmony are known to be early because of interactions with other rules; other examples post-date rules which entered the language in the historic period. Harmony usually affects only the low vowels, *ē and *ā (the latter conventionally written o/o in Arapaho and Atsina), e.g. *mexkāci 'someone's foot' > Ar wóʔooθ, At wóʔooc, Nw māʔhāc; *aθemwa 'dog' > Ar éθ (stem éθeb-), Nw atam, but unharmonized At óteb-.

One unusual type of vowel harmony occurred fairly early: in Arapaho and Nawathinehena ī becomes ū, a high back unrounded vowel, [u], not previously in the segment inventory, after a syllable containing *ā (Ar o/oo, Nw a/ā), provided that no dental consonant intervenes; in Atsina ī becomes ū only if immediately following ō (< *ā). The odd restriction, and the fact that Atsina does not have the same vowel as Arapaho, shows that the rule spread from one of the group to the rest. It cannot have been inherited from a Proto-Arapaho-Nawathinehena stage since its operation depends on the specific reflexes of each language: *sk becomes ʔt in Nawathinehena, so the sequence *āski becomes āʔti, but in Arapaho *sk becomes nondental ʔ, so the result is ooʔu, e.g. *māskiʔlēwa 'magpie' > Ar wooʔuxʔei, Nw māʔtihʔen.

A second difference between Arapaho and Atsina is that Atsina at this time lost *y (< *w, *y) after *x (< *š and postconsonantal *-θ) and *č (< *č, *θ).

Following the vowel harmony rule and the Atsina loss of *y described above, all the Arapahoan languages share in a fronting rule which probably diffused from Atsina. The results of this rule, which in Atsina affects *t, *č, *k, *x and *m, in Arapaho *k, *m and *x, and in Nawathinehena only *k (with traces of *m and *x perhaps due to the fact that Kroeber's informant spoke Arapaho better than Nawathinehena), are set out in Table 3.

ARAPAHO	t < *t	č < *č/θ	k < *p	x < *š/θ	m < *m
next to <u>ō</u> < *ā	t	θ	k	x	w
before <u>ū</u> < *ī/ō	t	θ	k	x	w
before <u>ē</u> < *ē	t	θ	č	s	b
before <u>ī</u> , y < *ī/ō, y/w	t	θ	č	s	b

ATSINA

before	ǒ<*ǎ	t	tθ	k	θ	w
before	ǝ<*ǝ	t	tθ	k	θ	b
before	ĩ,y<*ĩ/ǒ,y/w	tʷ	č	č	s	bʷ
word-final		tʷ	č	č	s	bʷ

NAWATHINEHENA

(*č) (*θ)

before	ǎ<*ǎ	t	c	č	k	s	m
before	ũ<*ĩ/ǒ	t	c	č	k	s	m
before	ǝ<*ǝ	t	c	č	k	s	m
before	ĩ<*ĩ/ǒ/y/w	t	c	č	c	s (š?)	m

TABLE 3. Arapahoan Consonant Reflexes

Following the changes caused by the fronting rule, Arapaho and Atsina lost postconsonantal y (< *y, *w). All the Arapahoan languages also dropped final short vowels, a change which may have taken place much earlier, since it does not interact with other rules.

2.7 Sources for Atsina History

In the last copy of his Observations on Hudson's Bay, compiled ca 1792, Andrew Graham includes a brief "Fall Indian" vocabulary. I have shown elsewhere (Pentland 1976) that Graham copied this from Edward Umfreville (1790). He did, however, collect a "Blackfoot" vocabulary on his own, probably at York Factory in 1772, which includes, among other languages, Atsina. For 'knife' Graham gives "Estewan-Wath (or) Mein-me-amungo" = Blackfoot *isttoan*, Atsina *wóoθ(o)*, Assiniboine *mĭn(a)* and unidentified "me-amungo". The word for 'gun', "Cattoo", is also probably Atsina (modern *kocíyo*). For 'tobacco' Graham has "Pistachkansheshawan"; the first part is Blackfoot *pistaxkan*, the second Atsina *ciísówoo(n)*.

From 1784 to 1787 Edward Umfreville wintered at Frenchman Butte, Saskatchewan, near the Alberta border, as a trader for the Northwest Company. During his stay on the North Saskatchewan River he gathered material for a book on the fur trade, including short vocabularies of the surrounding languages (Cree, Assiniboine, Atsina, Blackfoot, and Sarcee) which he published in 1790.

A somewhat larger collection of data was made by Peter Fidler during his residence at the mouth of the Red Deer River (near Empress, on the Alberta-Saskatchewan border) in the winter of 1800-1801. Fidler's Atsina vocabulary, along with short word lists of Crow and Shoshone, is included in his manuscript journal, now in the Hudson's Bay Company archives in Winnipeg.

From 1832 to 1834 Alexander Philipp Maximilian, Prince of Wied-Neuwied, toured North America, collecting (among other things) vocabularies of every language he encountered. His Atsina list (1906, 24:226-227) contains only 46 words, but they are much better recorded than other such amateur efforts.

Ferdinand Vandever Hayden was a geologist who made several western journeys from 1853 on; in 1855, while exploring the upper Missouri River, he met the Atsina on the Milk River (along the Alberta-Montana border) and obtained a vocabulary of about 150 words. Hayden states (1863:233) that he always consulted "the chiefs and leading men" for his data.

A less reliable collection is the short vocabulary and schedule of kinship terms which Lewis Henry Morgan (1871) obtained in 1862 from an Atsina woman who also spoke Blackfoot, via a Blackfoot-English bilingual. Later vocabularies do not usually add greatly to our knowledge of the changes in Atsina, since by the end of the nineteenth century the language was substantially as Taylor recorded it just prior to its extinction in 1967.

2.8 Changes in the Historic Period

2.8.1 Loss of Final Syllables

There is a general tendency in all Algonquian languages to drop final vowels (which in Proto-Algonquian were always short) and the entire final syllable if it consists of a sonorant consonant (especially a nasal or semivowel) plus the obligatory short vowel. Final syllables are often analogically restored in nouns and verbs, since they would be lost by rule only in part of the paradigm, e.g.

*eθwahikani	>	*eθwahika	'pointer, index finger'
*eθwahikanali	>	*eθwahikana	'pointers'
*eθwahikanenki	>	*eθwahikanenki	'on the pointer'
*newāpamāwa	>	*newāpama	'I see him'
*newāpamāwaki	>	*newāpamāwaki	'I see them'

This stage is perhaps best attested in Miami-Illinois, but almost all the languages show the effects of final syllable loss in a few words, especially in indeclinable particles, e.g. Fox *nōhika*, Potawatomi *nohək* 'seven' < *eθwahikani (from counting on the fingers) beside the thousands of nouns ending in Fox *-ikani*, Potawatomi *-əkən*.

Cheyenne provides the clearest evidence for a similar rule in the Plains languages: *cīmāni 'boat' > *semo*, pl. *semonótse*; *wexpwākana 'pipe' > *he'óhko*, pl. *he'óhkono*; *eθkwēwa 'woman' > *hé'e*, pl. *hé'eo'o*. Nawathinehena drops all final vowels, but the final syllable loss rule must be ordered before the merger of *w and *y with *n (part of the Great Plains Sound Shifts, 2.5.2), since only *w and *y are subject to deletion, and after the change of *wē to Nawathinehena *ī* (2.4.5), since they are lost only after Nawathinehena *ī* (which also drops if short), thus *eθkwēwa 'woman' (> *-īn(a)* by 2.4.5 and 2.5.2) > *ih(i)ʔi*; *sīpyiwi 'river' > *tīc*; but *metōni 'someone's mouth' (> *-īn(i)* by 2.5.2) > *matīn*.

In modern Arapaho and Atsina, final b/w (< *m) and n (< *n, *w, *y) are dropped together with a preceding short vowel, e.g. *aθemwa 'dog' > Ar éθ, At ót; *metōni 'someone's mouth' > Ar bétii, At bit^vii. In the earliest recordings of Atsina, however, final sonorants are often still present, e.g. *wexpwākana 'pipe' > Ar ííćóóg, At íicóog, but 1786 Pe-chou-on (initial P- is probably glottal stop); *θe'θēmāwa 'tobacco' > Ar síisowoo, At cíisóowoo, but 1772 sheshawan, 1786 Chees-ou-on. In other words the sonorant was already gone by the late seventeenth century: *eškwetēwi 'fire' > Ar sítee, At isítee, 1786 U-sit-ter (-er represents [ɛ·]); *aθemwa 'dog' > At 1786 Hudth-er. By 1800 almost all final sonorants have been lost: *kōna 'snow' > Ar íii, At íii, 1800 Ehe; *a'senya 'stone' > Ar óhe? (and with final syllable restored, Ar óhe'en, At óh'en) 'mountain', At 1800 hā; compare also E chog gah 'pipe', Che thow ā 'tobacco', Is sit ta 'fire' and Hot thay 'dog' from the Fidler manuscript with Umfreville's slightly earlier recordings. There are few final nasals in Fidler (1800), none in Maximilian (1834), good evidence for the claim that rules spread through a language word by word.

2.8.2 Development of *m

In 2.8.1 Proto-Algonquian *m still behaves like a nasal consonant in Arapaho and Atsina, though in the modern languages it has become Ar b/w, At b^v/b/w. In Nawathinehena and Cheyenne *m has not changed, but even in the earliest recorded Atsina it was already w before *ā: *mānθehsi 'flint, flint knife' > Ar wóoxé, At wóoθo, 1772 Wath, 1786 & 1800 Warth; *(we)-maškwōswa'θemwa 'elk-dog, horse' > Ar iwóxuuhóox, wóxhoox, At iwósiihóoθ, wóshóoθ, 1786 Wau-ce-hoth, 1800 Woos se hauth. In other environments *m persists well into the historical period -- before *ē Umfreville (1790) has b three times, m twice, Hayden (1863) has 3 m's, 10 b's; before *ī, *ō (> At i, ii) and word-finally spellings with m, b and w are evenly matched until the middle of the nineteenth century, when b (perhaps already b^v) becomes the most common reflex, but m does not disappear until the end of the century: *me'tekwi 'stick, bow' > Ar béete?, At béete, 1786 Bart, 1800 Bate ā, 1834 nemāth (ne- 'my'), 1855 mā-ta', 1862 Bā'-ta, 1899 bāt; *metātahθ- 'ten' > Ar béteetox, At bétootos, 1786 Met-tar-tuce, 1800 Bat tau tuse, 1855 mā-ta-ta'-sits, 1899 betāntos; *mīθehši 'hair' > Ar béíθ-, At b^víít-, 1834 nāwi-tāss (ne- 'my'), 1855 mi'-ta 'hair', bí'-ta 'head', 1862 Be-at-ah', 1899 bīta'an.

2.8.3 Development of *θ, *č

In Table 3 the Atsina reflexes of *θ and *č are given as tθ before low vowels, č (=tš) elsewhere. In the eighteenth-century vocabularies č is by far the most common reflex before i and in final position; Umfreville (1790) writes "tc(e)" twice (in the same morpheme), perhaps representing [tš]. The nineteenth-century vocabularies on the other hand have only c (=ts), which is also the modern Atsina reflex: *θe'θēmāwa 'tobacco' > At cíiθóówo, 1772 sheshawan (i.e. [(t)š-]?), 1786 Chees-ou-on, 1800 Che thow ā, 1855 se-tha'-wa (i.e. [(t)s-]), 1862 Tza-thā'-wā; *θowi 'arrow' > Ar óθ, At óc, 1786 Utce-ee (pl.), 1800 Otch e (pl.), 1855 uts, 1862 ot'-zo, 1899 hot^si (pl.). Before low vowels there is a similar split: only tθ

("t" once) in the eighteenth century, only t in later vocabularies, e.g. * a_əmwa 'dog' > Ar é_ə, At ót, 1786 Hudth-er, 1800 Hot thay, 1834 hótwi (pl.), 1855 a'-te, 1899 hote; *nyā_əananwi 'five' > Ar yó_əón, At Yó_əón, 1786 Yau-tune (perhaps [tʰ] for [t^ə]), 1800 Yāde thun, 1855 kin-a-ta'-nits (inflected form), 1862 Ya-nä'-tä-ne.

2.8.4 Development of x

The development of prehistoric x (< Proto-Algonquian *š, etc. -- 2.4.3, 2.6) is a little more complicated. The modern Atsina reflexes are θ before low vowels, s elsewhere; the *x > s shift had already occurred before our records begin, but before low vowels the vocabularies show "s" and "th" about equally until late in the nineteenth century: *pēšy_əkwanwi 'one' > Ar čéš_əy, At čéš_əy, 1786 Kar-ci, 1800 Ka thi u, 1899 tcā_əey; *neš_əkInš_əkwi 'my eye' > Ar nes_əiš_ə?, At *nes_əiš_ə, 1786 Nun-nec-so-on (error for Nun-nce-so-on?), 1834 ne-sēh-seh, 1855 ba-si'-the (be- 'someone's'), 1862 Pa-sa'-thā, 1899 bes_əš; *nyIš_əwanwi 'two' > Ar níš_ə, At níš_ə, 1786 Neece, 1800 Neethe, 1862 Na-na'-tha, 1899 nIš_ə. Goddard (1974:114) supposes that the early reflex was "č" (= [š]??); whether it was ordinary [s] or not does not really matter, since there were no other similar sounds in the language with which it could be confused.

2.8.5 Development of k

The change that has caused the most confusion among linguists is phonetically a very common one: early Atsina k before e becomes [č] in men's speech, [kʰ] in women's speech. Taylor (1967:118) notes that Edward Umfreville's 1786 vocabulary has "Kar-ci" < *pēšy_əkwanwi 'one' and concludes "Umfreville's informant must have been the Atsina wife of some company employee." Besides the fact that Taylor is referring to the Hudson's Bay Company, which Umfreville had left to join the Nor'-Westers in 1784, there is no reason to assume that Atsina women accompanied the men on the hazardous trip to the trading post, which lay in enemy (Blackfoot) territory. Until the end of the nineteenth century all vocabularies have "k" before e, including that of Ferdinand Hayden, who wrote "Whenever I have been obliged to accept the aid of women or ordinary men, I have always submitted the results to a chief to be verified or rejected" (Hayden 1863:233). Kroeber's 1899 collection (published in 1916) is the first to show the č of modern men's speech: *penkw_əeš_əwi 'gunpowder, ashes' > Ar čeʔiš_əee, At čʔiš_əee (men), kʰʔiš_əee (women), 1786 Kidth-er (misprinted H-), 1800 Keet thay; *ayāpēwa 'buffalo bull' > Ar enééč_əee, At enééč_əee, 1800 En ah k ("k" = [kē]), 1834 enáhkiä, 1855 a-ni'-ke-a, 1899 hānā_ətyei (ty for [č] is common in Kroeber's vocabularies); *nexpetwini 'my arm, hand, finger' > Ar nēc_əč_ət, At nēc_əč_ət, 1834 nah-kōth, nah-kettinach (pl.), 1855 ba-kit', ma-kit'-in (be- 'someone's'), 1862 Bā'-kik, 1899 bātyeti.

During the nineteenth century several Atsina phonemes developed more fronted allophones before front vowels: *ki (< Proto-Algonquian *pi) became či, then ci; *či (<*č) became ci as well, and *s (<*x<*š) became θ . Presumably *ke (<*pe) shifted to kʰe, but the palatalization went unnoticed as long as it remained within the range of American English /k/. By the turn of the century, however, kʰ was sufficiently fronted for Kroeber to hear it

as [tʷ] and [č], though he notes (1916:84) "Ty seems to be a very posterior t; it is sometimes heard as ky, and the Arapaho so render it in trying to reproduce Gros Ventre." As Flannery (1946:134) observes, Kroeber does not mention any difference between men's and women's speech, but by the time she did her fieldwork the distinction was firmly entrenched. It is apparent that Atsina women were at least a full generation behind the men in adopting fronted allophones of k; but if there were sex distinctions before 1900 they were not conspicuous enough to appear in the vocabularies (the only variation noted is a single "k" for tʷ recorded by Lewis Henry Morgan in 1862 from an Atsina woman).

Flannery (1946:135) suggests that the difference between men's and women's speech may have accelerated the death of the language:

...if a member of either sex "talked like the other" he or she was considered bisexual. ...many of the young folks who have some speaking knowledge but not full fluent mastery of Gros Ventre refuse to attempt to speak it. They are afraid of making just this type of error,--they know they will be laughed at, and furthermore they know the connotation in the minds of the older generation.

2.9 Dating the Plains Algonquian Changes

If all languages undergo phonological innovations at the same constant rate, we would have to agree with Kroeber (1916:73) "that the Arapaho have been separated from the Central and Eastern Algonkins for more than a thousand years." Nothing less would allow for such drastic sound change: virtually every Proto-Algonquian segment has changed into something else, often with damaging side effects, e.g. the loss of *k not only creates vowel clusters of up to four morae in length, but also results in several important inflectional endings' merging with zero.

By the time the first vocabularies were published (Blackfoot and Atsina 1790, Cheyenne 1839) the Algonquian languages spoken on the Great Plains were already so different from each other and the rest of the family that the relationship went unnoticed for some time. Once the shifts had been worked out, however, Cheyenne, Arapaho, Atsina and Nawathinehena⁸ turned out to be ordinary Algonquian languages: most lexical items continue well known Proto-Algonquian shapes, and the morphology is similar to the other members of the family. Before the Great Plains Sound Shift took place, these languages would have been easily recognized as Algonquian, and limited communication would have been possible with the Cree, Menomini, Miami and other groups east of the Plains.

Ives Goddard (1967a) has presented a correspondence that may help to date the sound changes: Arapaho *kokúy*, Atsina *kociyo* 'gun' are perfect cognates of Miami *papikwani* 'gun' (< Proto-Algonquian **papikwani*, **pepikwani* 'flute'). Unless Arapaho-Atsina extended the aboriginal word for 'flute' independently of the Miami, the major changes included in the Great Plains Sound Shift must have occurred after guns reached the western Great Lakes area, i.e. after A.D. 1600.

There is other evidence that the changes are recent: the Plains Cree still call the Cheyenne *kā-nēhiyawēsicik* 'those who speak a little like us', the diminutive form of their own name. For such a term to persist Cheyenne cannot have undergone the major shifts more than a few centuries ago.

In a note on words for 'buffalo' in Indian languages of the southeastern United States, Allan Taylor (1976) shows that the most plausible source of Tunica *yániši*, Creek *yanása*, Cherokee *yahnsa*, etc., is Navajo (or other Apachean Athapaskan) *ayání ʔaʔ* 'a/some buffalo'. Since the Athapaskans did not reach the southern plains before A.D. 1200 (and possibly considerably later) the term could not have spread across the Mississippi before then. Even more interesting is Taylor's observation that the Caddoan words -- Caddo *tanahaʔ*, Wichita *ta·rha*, Kitsai *tánaha*, Pawnee *tarahaʔ*, and Arikara *tanáhaʔ* may be cognate if we postulate a later Caddoan change of *y to t and *s or *š to h. Goddard (1974:110) points out that Proto-Arapaho-Atsina and Wichita have almost identical phoneme inventories. I do not think it coincidental that Caddoan and the Algonquian languages of the Plains share both inventory and at least two fairly unusual sound changes (*y > t in Cheyenne, though not in Arapahoan, and *s > h in Cheyenne, Arapaho-Atsina and Nawathinehena [in Nw only in consonant clusters]): both groups lived on the edge of the plains until the arrival of the horse made it possible for them to become efficient buffalo hunters. If the changes occurred first in Caddoan, they were likely passed on to the Algonquians by the Pawnee and Arikara, the two tribes who were historically closest to the Cheyenne and Arapaho.

Arapaho, Atsina and Cheyenne have a new word for 'corn', Ar *béskootéé*, At *bískóotée*, Ch *hoókóhtsése* (pl.) (Cheyenne also retains *máhaeme* < **melōmini*): while Arapaho *sk* cannot derive from the same Proto-Algonquian source as Cheyenne *k*, the two words can be traced to a post-Great Plains Sound Shift form **-xkātē-*, which is similar enough to Mandan *koxate* (*kó-ha-tē* Curtis 1909, 5:172; cf Crow *xò·xá·ši*) to make it likely that the Algonquians received the word from them. The Mandan villages along the Missouri River were the main source of corn for all the northern equestrian tribes, but the Cheyenne, at least, grew their own supply until forced out of the Red River valley in the late eighteenth century (Swanton 1930).

The linguistic evidence indicates that the Cheyenne (and, presumably, the Arapaho-Atsina) did not trade corn from the Siouan village tribes until after the major sound changes had taken place. On the other hand, they apparently knew about firearms before the shifts occurred: this narrows the date down to sometime between 1600 and 1775.

Ray (1974:157ff) shows that the Blackfoot and Atsina got their first horses between 1690 and 1750; the Cheyenne became mounted a little later, probably around 1750. Without horses, life on the plains would not have been very enticing to these people, whose skills in horticulture, hunting and fishing were fitted for a Woodland environment. As long as they remained on the edge of the plains, they were in contact with other Algonquian groups; this would have tended to level out differences in the various languages.

If, as seems likely, the Great Plains Sound Shift was only part of the drastic cultural change the Cheyenne and Arapahoan tribes underwent in shifting from the woodlands to the plains (cf. Goddard 1974:116), all of the changes listed in 2.5 and 2.6 must have taken place between 1700, when the first horses arrived, and 1750, since they were already complete when Andrew Graham accidentally obtained the first few words of Atsina. Once they had arrived on the plains, the rate of change did not return to its old low level: in 2.8 it was shown that Atsina has had at least one significant phonological innovation in every generation from the time of the first record up to the death of the language. The continuing rapid rate of change cannot, then, be due entirely to accompanying cultural change.

The literacy rate was always zero, the same as other, more conservative Algonquian languages. Foreign influences were strong: the Atsina have throughout their recorded history found it necessary to be bilingual in Blackfoot (more recently, in English) in order to communicate with the outside world. As these languages are not similar to Atsina in any meaningful way they would exert no retarding force on the rate of change. There has always, it seems, been only one band of Atsina, so the effect of fragmentation is nil. An important factor is the size of the Atsina-speaking population. Always a small tribe, harassed by more powerful neighbours, the number of speakers dropped sharply in the last years of the language's existence for two reasons: there was no perceivable advantage to be gained by learning it, and a definite disadvantage socially to speak it badly.

3. Icelandic

The Icelandic language is well known as one that has undergone almost no changes during the last eight centuries. It is also one of the best documented languages in the world, since literacy has always been greatly prized in Iceland, and manuscripts were copied and circulated there far more freely than in other parts of Europe.

3.1 Old Icelandic

3.1.1 Introduction

In a copy of Snorri Sturluson's Edda made ca 1360, the scribe thoughtfully included four "grammatical treatises" on the Icelandic language as appendices. The first to appear in the manuscript (Codex Wormianus), hence known as the First Grammatical Treatise, is generally attributed to Hallr Teitsson, a member of one of the most famous families in Iceland (his foster-uncle was Ari the Learned), and was composed ca 1130-1140. I have summarized the Treatise in 3.1.2, following the edition of Einar Haugen (1972) but substituting modern linguistic jargon, in keeping with Hallr's position as the first modern descriptive linguist.

3.1.2 The First Grammatical Treatise (summary)

*In addition to the five Latin vowels (a e i o u) Icelandic has the following four: q ɛ ø y. Q (ɔ) is less open (kveðinn minnr opnum munn)*⁹

than a, but more open than o; ɛ (ε) is less open than a but more than e; ø (ö) is less open than e and more than o; y (ü) is less open than i and more open than u. All but i occur between the same two consonants:

sa·r	'wound'	sq·r	'wounds'
so·r	'(he) swore'	sø·r	'fair, reasonable'
su·r	'sour'	sy·r	'sow (pig)'
[se·r	'oneself'	sę·r	'sea'] ¹⁰

Nasalization (f nef kveðinn) and *length* (hvárt stafr er langr eða skammr) are also phonemic (grein sú er máli skiptir 'a distinction which changes the meaning'):¹¹

far	'vessel, ship'	fa·r	'danger'
rām̄r	'strong'	rā·mr	'hoarse'
ha·r	'hair'	hā·r	'shark'
flytr	'(he) drives'	fly·tr	'(it) floats'
brȳnna	'to water (cattle)'	brȳ·nna	'fair (wind)'
sy·na	'lap (of board)'	sȳ·na	'to show'

A vowel becomes nonsyllabic (hafnar sínu eðli 'loses its nature') when joined with another vowel: austr 'east', ęarn (-iarn) 'iron', eir 'copper, brass', ęo·r 'steed', ęyrer 'ounce', ęi·n 'wine'.

The consonants are p t k b d g f θ s h l r m n. When it occurs immediately before g in the same syllable n assimilates (tekr viðbland) to [ŋ], but the alternation is not phonemic. After a vowel all consonants except θ [h does not occur] may be long (megu hafa tveggja samhljóðanda atkvæði 'may have the pronunciation of two consonants') or short, e.g. Eigi eru ql̄ ql̄ at einu 'Not all beers are alike'; Huer̄ kona ok huerr̄ karlmaðr̄ skyldu þess fús̄, sem guð er fúss̄ 'Every woman and every man should be desirous of that of which God is desirous'.

3.1.3 Hallr's Conservatism

The First Grammatical Treatise describes a variety of Icelandic which was conservative, perhaps already obsolete, even in Hallr Teitsson's time. His discussion of the diphthong ęa makes it clear that most people already had raised the glide to ī, though he (and "many sensible men") still perceived it as ę. By the end of the twelfth century the vowel system had been reduced from the 27 (plus 9 allophones) he could distinguish to 15, by the rules listed in 3.1.4-3.1.8.

3.1.4 Short ę

Though Hallr claimed that short ę was distinct from e, it is likely that he was misled by the contrast between long ę̄ and ē. Hreinn Benediktsson (1959:290) observes "There is evidence of the merger of these two phonemes in some positions already in the tenth century, and their definitive merger hardly took place later than in the middle of the twelfth

century", but Haugen (1972:41) notes that Hallr got his example of ξ historically correct even if he had already merged ξ with e: $\mu\epsilon r$ 'man' > $\mu\epsilon r$, $\mu\xi nes k$ 'he is wont' > $\mu\xi nes k$.

3.1.5 Phonetic Adjustments

Hreinn Benediktsson (1959:291) suggests that following the loss of short ϵ , i was lowered and a fronted (with subsequent lowering of short o and u) to distribute the phonetic ranges of the surviving short vowels more evenly, i.e. [i e (ϵ) α o u] became [i ϵ a \circ u]. This phonetic adjustment had no effect on the transcription of stressed vowels, but unstressed e and o (the only unstressed vowel is a) were henceforth identified with i and u: $fr\ddot{a}m\ddot{e}r$ 'forward (m.pl.)' > $fr\ddot{a}m\ddot{i}r$, $se\theta o$ 'look thou!' > $se\theta u$.

3.1.6 Long \circ

Soon after the Treatise was compiled, \circ became a \cdot , while nasalized $\ddot{\circ}$ merged with \ddot{o} , e.g. $s\ddot{\circ}r$ 'wounds' > $sa\cdot r$ (homophonous with the singular), $\mu\ddot{\circ}n$ 'hope' > $\mu a\cdot n$; $\ddot{\circ}l$ 'strap' > $\ddot{\circ}l$, $\circ le$ 'Ole (man's name)' > $\ddot{o}li$.

3.1.7 Nasalization

"Probably not later than in the latter half of the twelfth century" (Hreinn Benediktsson 1959:293) nasalization of vowels was lost: $\ddot{o}l$ 'strap' then became $o\cdot l$, \ddot{i} 'in' > $i\cdot$, $fr\ddot{a}$ 'from' > $fra\cdot$.

Nowhere in the large corpus of Old Icelandic except the seven pages containing the First Grammatical Treatise is nasalization indicated. That it did exist in Hallr Teitsson's day is certain, however: his long nasalized vowels always correspond to Proto-Germanic *Vn, e.g. $r\ddot{\circ}$ 'corner, nook' < *wranh \ddot{o} - (cf. English wrong), $\ddot{o}rar$ 'our' < *unzaraz (cf. German unser), \ddot{i} 'in' < *in.

3.1.8 Short \circ

Around the end of the twelfth century \circ merged with \emptyset (long \circ had already disappeared, 3.1.6): ql 'ale' > $\emptyset l$, $\mu\circ n$ 'used to (f.)' > $\mu\emptyset n$. Thus Hallr's system of a e i o u \circ ξ \emptyset y, plus nasalization and length, was reduced to a e i o u \emptyset y, long and short, plus long ξ , within two or three generations.

3.2 Middle Icelandic

3.2.1 Introduction

I use the term Middle Icelandic to include the period between the middle of the thirteenth and the end of the seventeenth centuries. Most Old Icelandic literature survives only in copies made during the early Middle Icelandic stage, and their spellings clearly show that the mergers described in 3.1 had already taken place.

3.2.2 Long ø

The beginning of the Middle Icelandic period is marked by the merger of long ϕ with ϵ , thus reducing the vowel system to relative symmetry:

	-back	+back	-back	+back
+high	i y	u	i· y·	u·
-high	e ø	a o	e· ϵ ·	a· o·
	Short		Long	

While ϵ now functions as the long counterpart of ϕ it was probably not a rounded vowel (Hreinn Benediktsson 1959:296): $m\phi$ ·nde 'he ridged the roof' > $m\epsilon$ ·ndi, ϕ ·ra 'to upset, madden' > ϵ ·ra. For ϵ · Modern Icelandic orthography has \ae , continuing the manuscript \ae . (from Hallr Teitsson's e caudata, ϵ , borrowed from Latin and Old English tradition), but italic and handwritten ϵ , which appears in the manuscripts as a graph for ϕ (·) following the mergers of 3.1.6 and 3.1.8, thus $m\ae$ ndi, \ae ra.

3.2.3 Unrounding of y(·)

During the fifteenth and sixteenth centuries y(·) unrounded to i(·): flytr '(he) drives' > flitr, sy·na 'to show' > si·na, eyrer 'ounce' > eirir 'cent (1/100 of a króna)'.

Hreinn Benediktsson (1959:299) demonstrates that while the change of long y· to i· is predictable, the general trend of Icelandic vowel developments should have led to a merger of short y with u. He cites doublets like spirja, spurja 'to ask' < spyria, kissa, kiusa 'to kiss' < kyssa, to show that this shift did actually start, but observes (311) that the merger of y with u is in general prevented by high functional load.

3.2.4 Palatalization

The loss of contrast between ϕ and ψ (3.1.8) and the abortive merger of y with u (3.2.3) created new consonants (or consonant clusters) where there had previously been predictable allophones: before the shifts, k and g were [k^i g^i] only before front vowels and glides, but palatalization became phonemic with the merger of front and back vowels, e.g. kiurr (~kirr) 'quiet, still' < kyrr, kiør 'choice, decision' < kør (contrasting with kør 'sickbed' < kqr), giør 'flock of birds' < gør (contrasting with gørn 'guts' < qorn).

3.3 Modern Icelandic

3.3.1 Diphthongization

In the fourteenth century long nonhigh vowels began to diphthongize: e· ϵ · a· o· became [e_i a_i a_u o_u] respectively.¹² This should have led to the merger of e· with the previously existing diphthong e_i (< e_i , e_y), and fourteenth-century manuscripts do have spellings like leit for le·t '(he) let, had (s.t.) done', but they were prevented from falling together by the reversal of [e_i] from e· to [i_e] (Hreinn Benediktsson 1959:298). Similarly [a_u] from a· should have merged with the diphthong a_u , but the latter became [ϕ_u] (> modern [ϕ_y]) or, as Hreinn Benediktsson would have it, [ϕ_i].

The fronting of *au* must have occurred after the palatalization of *k/g*, since *kaupa* 'to buy' is modern [køypa], not [kiøypa]. The modern pronunciation of *u* as [y] and the change of *ę* to [ai] must also be later than 3.2.4: *kunna* 'to know how' > [kynna], not [kiynna]; *kęla* 'to cool' > [kięla] > [kiailla].

3.3.2 Consonants

Among the consonants there have been few phonemic changes. Final double *-rr*, *-ss* (and sometimes in verbs, *-nn*) are shortened, e.g. *berr* '(he) carries' > *ber*, *i-ss* 'ice' > *i-s*, *ski-nn* '(it) shines' > *ski-n*. Final postvocalic *-t* becomes *θ* (written and pronounced *ð*), e.g. *θat* 'that' > *θaθ* (orthographic *það*), *li-tit* 'little (nt.)' > *li-tiθ*, *farit* 'gone' > *fariθ*.

The rest are minor rules: the suffix *-r* becomes *-yr* (orthographic *-ur*, still written *-r* by some conservatives) after a consonant, e.g. *maθr* 'man' > *maθyr*, *tekr* '(he) takes' > *tekyr*; final *-k* becomes *g* in *miok* 'very, much' > *miog* and the pronouns *mik* 'me', *θik* 'thee', *sik* 'oneself'; the middle voice endings *-umk* (1 sg.) and *-sk* become *-st*, but *-umk* (1 pl.) becomes *-ymst* (written *-umst*).

3.3.3 Allophones

There are a number of changes which do not show up in the orthography; most need not be considered phonemic changes, though the allophones are sometimes startling. Only the more important alternations will be described (for a complete listing see Stefán Einarsson 1949:1-29), and only the northern dialect (Akureyri), since it is the one with which I am most familiar.

The fricatives *f* and *θ* (but not *s*) are voiced if not initial, doubled, or next to a voiceless consonant, e.g. *hafθi* '(he) had' > [havði]. Pre-vocalic *u* becomes [v], e.g. *uān* 'hope' > [vaun], *tųę-r* 'two (f.)' > [tvaięr]; the combination *hų* becomes [kv], e.g. *hųat* 'what' > *hųaθ* > [kvað]. Post-vocalic *g* becomes [i] before front vowels and before *i* (which then drops), [x] before voiceless consonants and the cluster *lt*, and [ɣ] before back vowels, *ð* (< *θ*), *r*, the cluster *ld*, and finally: *daginn* 'the day' > [daiin], *hugsā* 'to think' > [hyksa], *sigt* 'sailed' > [sıxt], *sagθi* '(he) said' > [sayðr].

Doubled *pp*, *tt*, *kk* are preaspirated [hp ht hk]; *bb*, *dd*, *gg* are voiceless lenis [p̥ t̥ k̥]. The combinations *fn* and *fl* become [pn pl] intervocalically, [pn̥ pl̥] finally; similarly, *rn* and *nn* become [tn̥] between vowels and before *r*, [tn̥] finally (but *nn* changes only if the preceding vowel is long or a diphthong), and *rl* and *ll* become [t̥l] intervocalically and before *r* or *n*, [t̥l] word-finally: *efli* 'strength' > [epli], *hōfn* 'harbour' > [hōpn], *barn* 'child' > [bat̥n], *bru-nn* 'brown' > [brut̥n], *bru-nni* 'brownier' > [brut̥ni], *karl* 'Charles' > [kaɾ̥l], *allr* 'all' > [aɾ̥lyr], *fiall* 'mountain' > [fiat̥l].

3.4 The Icelandic Rate of Change

3.4.1 Recent Changes

Icelandic did not, of course, cease to change once the modern stage had been reached. In the eastern and southwestern dialects short [ɪ y] (orthographic i/y and u respectively) have been lowered to merge with e and ø; for some speakers the change is limited to those environments where the vowels are lengthened (i.e. before single consonant, one of p t k s followed by ð, r or v, or finally), but others have the merger everywhere, creating a new vocalic system (Hreinn Benediktsson 1959:305; modern Icelandic orthography is given in parentheses):

[i]	(í, ý)	[u]	(ú)	
[ɪ]	(i, y, e)	[ɔ]	(o)	
	[ʏ]	(u, o)	[a]	(a)

plus the diphthongs [iɪ ʏʏ aɪ aʊ ɔʊ] (most vowels and diphthongs may also be preceded by ð, e.g. [ðiaʊ], orthographic já). At present this merger is considered "vulgar" (Stefán Einarsson 1949:11), but it is especially common in North American Icelandic, and is probably the next change that will spread throughout the language.¹³

3.4.2 Dialect Differences

Icelandic is unusual among European languages in having few dialect differences -- even a narrow phonetic transcription shows little difference between the four recognized dialect areas (cf. Stefán Einarsson 1949:viii) -- but more important is the fact that there is no preferred, "standard", or "received" variety:

One of the best known and most remarkable characteristics of Icelandic, at least as compared with most or all other European languages, is the uniformity of the language area. ...not only are the dialect differences few and insignificant; for the most part the different varieties of Icelandic also enjoy the same social reputation. The different geographically distributed variants are all considered equally "good" or "correct" (Hreinn Benediktsson 1959:306).

3.4.3 Conservatism

Such uniformity is a consequence, not a cause, of Icelandic's unusual situation. Ever since the use of the Latin alphabet for writing the vernacular was introduced (a generation before Hallr Teitsson wrote his treatise) Iceland has maintained a higher literacy rate than any other country in the world. There have never been any political barriers to travel around the island, nor, for the most part, to the rest of Scandinavia. The Icelandic parliament, founded in A.D. 930, drew representatives from the whole country; any man of influence would have tried to attend the sessions every year. The Christian church, which in the rest of mediaeval Europe had a virtual monopoly on learning, became the national

religion by act of parliament in A.D. 1000; since the local leaders appointed their sons to the clergy (Hallr Teitsson's great-grandfather Gizurr brought Christianity to Iceland; another great-grandfather, Ísleifr, his grandfather Gizurr, his son Gizurr, and Hallr himself were all priests) literacy was promoted among the upper classes rather than confined to monasteries. Though Icelanders have always been great travellers, few outsiders ever made their way to the island: isolation and the lack of exploitable natural resources (other than the fields and the sea) have kept the culture remarkably conservative.

3.4.4 Icelandic's Score

Icelandic thus scores very high for all the variables I have tried to isolate:

Literacy: highest in the world.

Cultural conservatism: high.

Areal influences: none.

Population size: median (ca 200,000 in the twentieth century).

Diglossia: virtually nil (3.4.2)

Fragmentation: a large group emigrated to North America in the 1870s; communication was maintained to some degree, but outside Iceland the language is likely to become extinct before any major changes will have had time to become established.

The fact that the language has not changed significantly in the last eight centuries is self-reinforcing: modern Icelanders can read twelfth century literature with no difficulty, so that the older forms continually exert a retarding influence on the language.

4. Cameroon Pidgin English (Wes-Kos)

4.1 Political History of Cameroon

The earliest contact between Bantu-speaking peoples and the western world was about 2500 B.C., when Egyptians visited the land of Punt (= bu-ntu 'country of the ba-ntu', Doke 1938). Two millenia later Hanno led a Carthaginian expedition around the west coast of Africa, giving special attention to the volcanic Mount Cameroon, which he named the Chariot of the Gods, but until the sixteenth century A.D. the main trade route was overland, across the Sahara from Carthage, later from Tripoli, to Lake Chad and thence down to the coast (Eyongetah & Brain 1974:9-11, 14-15).

With the opening of a sea route to Cameroon in the late fifteenth century, trans-Saharan caravans became unprofitable. Though the Portuguese made the initial contact, they were soon supplanted by Dutch, English and French traders, interested mainly in slaves. Political control lagged far behind merchant and missionary influence: when the British finally decided to annex Cameroon in 1884 to prevent the French from doing so, they were surprised to find that the Germans had beaten them both, having bribed the local chiefs to sign their treaty. Native opposition to German rule resulted in almost continuous warfare until 1915, when British, Belgian and French troops occupied the colony. All but a narrow strip along the

Nigerian border became a French trusteeship, gaining its independence in 1960; the southern half of the British protectorate joined it a year later to form the Federal Republic of Cameroon.

4.2 The Status of English in Cameroon

While control of trade passed to German interests in 1884, British and American missionaries were allowed to remain with their churches and schools. Pidgin English, originally limited to use as a lingua franca between coastal traders and inland tribes, became more widespread under German rule: even the German treaties were written in English (Eyongetah & Brain 1974:26).

In West Africa Pidgin English probably first developed in the seventeenth century, when the British became the most influential traders. It has been continually reinforced and altered by the presence of a small local elite of speakers of standard English in Cameroon: merchants, missionaries, school-teachers, and (more recently) native graduates of English universities. For our purposes the source language may be taken as identical to modern "received pronunciation" (RP) British English as recorded by Daniel Jones (Jones & Gimson 1977). There are a few survivals in modern Wes-Kos of an earlier stage, in which the phonology was simpler and the vocabulary was drawn from other European languages besides English (e.g. piccaninny, a West Indian borrowing of Spanish pequeño or Portuguese pequeno, pequenino 'little'; savvy < Spanish sabe [usted] '[you] know'; palaver < Portuguese palavra), but phonologically the best fit is provided by RP English.

4.3 Wes-Kos Phonology I: Substratum

4.3.1 The Corpus

My description of Wes-Kos (Cameroon Pidgin English) is based on two texts, "Dodo-Bar fo Manjo" and "Yes, marred na ndeck", written by a Mr. Jonghe for his column "King fo toly" ('the story king') in Le Courier Sportif du Benin (Douala, western Cameroon) and reprinted in G. D. Schneider's West African Pidgin-English (1966). Phonologically this dialect is rather different from the variety Schneider describes: Mr. Jonghe is a native speaker of Bamiléké, while Schneider's informants are from the Kom and neighbouring tribes in North West Province.

4.3.2 The Sound System

The Wes-Kos phonological system is very different from the English dialect on which it is based, but similar to Bamiléké and other languages of Cameroon. The consonants are listed in Table 4. Syllables may begin with any consonant, a consonant followed by l, r, or w (attested clusters are pl, bl, fl, mbl, kl, gl; pr, br, fr, tr, dr, ndr, kr, gr; mw, tw, sw, šw, nčw, kw, gw, ngw), or zero. The underlying clusters sp, st, sk, sl, sm and sn have variable surface forms. Most of the non-English combinations occur only in personal and place names, but there are also loanwords from

various substrate languages (e.g. mbiambiá 'hair') and reshapings like mblóda 'brother', nyi 'he'.

In the dialect of Wes-Kos that Schneider (1966) describes there are seven vowels (i e ε a o u), all of which occur with high (V) or low (unmarked) tone; there are no long vowels or diphthongs: trái 'try' is disyllabic [trá-í]. Jonghe's spellings, which are based on English orthography, suggest a five-vowel system (a e i o u) in his dialect; he does not indicate length or tone.

	[+anterior]				[-anterior]			
	[-cor]		[+coronal]		[-cor]		[+coronal]	
	[-nas]	[+nas]	[-nas]	[+nas]	[nas]	[+nas]	[-nas]	[+nas]
[-cont, -voice]	p	mp	t	nt	č	nč	k	nk
[-cont, +voice]	b	mb	d	nd	ǰ	nǰ	g	ng
[+cont, -voice]	f	mf	s	ns	š	nš	h	-
[+cont, +voice]	w	m	r	n	y	ny	l	ŋ

Table 4. Wes-Kos Consonants.

The restrictions on occurrence of syllable-final consonants vary, depending on the speaker's mother tongue and his command of standard English. In underlying forms perhaps all consonants are possible: most of the gaps noted (in Wes-Kos as a whole) are due to restrictions in English, e.g. the lack of final mb, mf, r, ny, h, and ng. A single consonant cluster, ks, also occurs in final position.

4.3.3 The Bamiléké Sound System

The Fe'fe' dialect of Bamiléké has a similar consonant inventory: the only additions are a series of voiced fricatives (v mv z nz ž nž ɣ) and, in final position, ʔ. According to Ngangoum (1970) r occurs only in loanwords (many speakers substitute l); mp is realized as mb; ǰ and g are always prenasalized nǰ, ng; and there is an additional set of clusters ending in -h (ph, mvh, nk, etc.).

The main difference between Wes-Kos and the Fe'fe' dialect is in the vowel inventory. Ngangoum (1970) gives the following table (I have altered some of his symbols for typographical reasons):

i	ii	ĩ	u	uu	u		
e	ee		ə	əə	o	oo	
ε	εε				ɔ	ɔɔ	õ
a	aa		α		ɒ	ɒɒ	õ

To demonstrate that length and four tones (here numbered 1 [low] to 4 [high]) are distinctive he gives the following set: nkam¹ 'qui disperse', nkam² 'morceaux', nkam³ 'réunir', nkam⁴ 'disperser', nkaam³¹ 'quantité', nkaam²³ 'notable'. There are also a few diphthongs, and complicated tone sandhi rules. Reanalysis of the basic phonetic data would probably reduce the consonant and vowel inventories considerably, but requires access to the "étude complète inédite" on which Ngangoum (1970) is based.

4.4 Wes-Kos Phonology II: Superstratum

In this section each word is given in four forms: Jonghe's spelling, my interpretation of it, the RP English equivalent, and the standard English orthography; the last column serves also as an informal gloss of the Wes-Kos form.

4.4.1 English θ and ð become Wes-Kos t, d:

throwe	trówé	θrə(ə)wéy	'throw away'
wity	witi	wið, wiθ	'with'
dat	dat	ðat	'that'
oda	áda	áðə	'other'

4.4.2 Initial s- Clusters

In the dialect described by Schneider (1966) initial s- is lost before a consonant followed by r (probably also l), e.g. trét 'straight', sw becomes šw (šwít 'sweet'), and other initial clusters of s + consonant insert an epenthetic low tone i, e.g. sitík 'stick'. There are no examples of sCr-, sCl- in my corpus, but the other clusters appear to remain:

swit	swít	swi·t	'sweet'
smoll	smól	smo·l	'small'
speshill	spéšil	spešl	'special'
stick	stík	stik	'stick'

Speakers of Wes-Kos who are less familiar with English do away with all s-initial clusters, as the combination does not occur in Bamiléké. In an earlier stage of Wes-Kos this was the norm; at least one example survives:

toly	tóli	stó·ri	'story'
------	------	--------	---------

4.4.3 Syllable-Final Clusters

Most syllable-final consonant clusters are eliminated. Clusters with nasal first element usually remain as Wes-Kos prenasalized consonants, but nθ is reduced to n:

mun	mán	manθ	'month'
danss	dáns	da·ns	'dance'
tchenj	čénj	čeynǰ	'change'

Non-nasal consonants are lost before and after fricatives (which must be voiceless in Wes-Kos), but ks remains:

dassol	dás-ól	ðats ɔ·l	'that's all, only'
lep	lép	left	'left (past part.)'
sep	sép	self	'self'

Jonghe writes "ask" but probably pronounces it aks, continuing the common nonstandard southern British form (standard ask is an early seventeenth-century loan from the northern dialects). On the other hand, his "wity" reflects voiceless θ, the northern variant, in 'with'.

4.4.4 Wes-Kos l and r

English l remains before a vowel, and syllabic l becomes il:

louk	lúk	luk	'look'
play	plé	pley	'play'
pípil	pípil	pi·pl	'people'

In the western dialect described by Schneider (1966) syllabic l becomes u with low tone, e.g. pípu 'people'.

In the variety of English on which Wes-Kos is based postvocalic r is realized as a central glide (ə) or lengthening of the vowel. RP ə (<er) becomes Wes-Kos a with low tone, and iə (<Ir) becomes ía:

afta	áfta	a·ftə	'after'
pawa	páwa	pawə	'power'
biye	bía	biə	'beer'
hiya	hía	hiə	'here'

Elsewhere postvocalic r becomes zero, though Jonghe sometimes retains the English spelling:

day, dey	dé	ðeə	'there'
fo, for	fo	fɔ·	'for'
work	wók	wə·k	'work'
tannap	tanóp	tə·n ap	'turn up' ¹⁴

In relatively unassimilated words, Wes-Kos retains English prevocalic r, but more often it is replaced by l, following the pattern of Bamiléké:

rum	rúm	ru·m	'room'
contry	kóntri	kántri	'country'
married	máred	márid	'married, marriage'
blouck'am	blók-am	brəwk 'əm	'broke them'
kell-am	kél[i?]-am	kári 'əm	'carry them'
toly	tóli	stó·ri	'story'

There is a single word with r < l in Jonghe's texts: "mindro" 'middle'. Schneider's dialect has míndu with regular u from syllabic l.

Schneider (1966) attempts to describe "Broad Pidgin-English", a variety neither overly anglicized nor assimilated to a particular local language -- an ideal seldom met with in the field. There is evidence in his North West Province text for three treatments of prevocalic r: in the majority of words, r is retained; in texts recorded from some Kom speakers, r becomes l, as in the Bamiléké variant, e.g. aláta 'rat', hóngili 'hungry';

a few forms (from another dialect?) have $n < r$, e.g. pánábu 'parable', béni 'bury'.

4.4.5 Wes-Kos Vowels

Length is not distinctive in Jonghe's dialect of Wes-Kos. RP English long vowels (including ey, əw = e', o') merge with their short counterparts, but ə' seems to become o, as do RP ʌ and ɔ.

laskel	láskil	rá'skl	'rascal'
oll	ól	ɔ'l	'all'
possa	pósa	pə's	'purse'
wekop	wékóp	weyk ʌp	'wake up'
rod	ród	rəwd	'road'
swit-wan	swít-wan	swi't wʌn	'sweet one'

English diphthongs usually remain, but ay is recorded as both a and ái:

ma, may	ma ~ mai	may	'my'
san-tan	són-tam	sʌn taym	'sun-time, day'
nait	náit	nayt	'night'
naoh	náo	naw	'now'
nyiouss	nyús	nyu'z	'news'

Almost all words are borrowed in their fully-stressed form (and hence receive high tone on the stressed vowel), as if they were first heard in isolation.

4.4.6 Irregularities

As might be expected in a language with such an unusual history, there are a number of irregular correspondences. Wes-Kos occasionally has e where a might be expected:

tchens	čéns	ča'ns	'chance'
kesh	kés	kač	'catch'

This may reflect borrowing from a nonstandard variety of English. The following words follow no particular pattern:

nyi	nyi	hi'	'he'
mbloda	mblóda	brʌðə	'brother'
ndeck	ndék	(det ?)	'debt'
noba	nóba	névə	'never'
hansa	hánsa	á'nsə	'answer'

4.5 The Wes-Kos Rate of Change

From standard English to conversational Wes-Kos is a tremendous leap, not only in the phonological component examined here, but also in morphology, syntax, lexicon and semantics. Though the first English contact with Cameroon was more than three centuries ago, the language has not taken that long to change into its present state. As RP English and other

varieties close to it have been used by a small but influential minority throughout the contact period, Wes-Kos is drawing closer to the standard, not diverging further from it (4.2).

In practical terms, the changes took place instantaneously, as the first speakers tried to adapt English words to their own language's sound patterns. Since the amount of change is considerable, no matter how it is measured, the rate of change approaches infinity. Even if we allow a full three centuries for the alterations that have occurred, the rate is still far higher than most languages ever experience.

In the case of Wes-Kos, of course, we do not have to seek far for a reason for the rapid rate of change: it is the usual result when speakers of one language attempt to learn another that is phonologically dissimilar. Except in the special circumstances that give birth to pidgins (and, later, creoles) such imperfectly learned languages quickly disappear: either the student receives further instruction and practice so as to approach the standard version of the language, or he loses it through disuse.

5. Measuring the Rate of Change

5.1 Population Size

As a factor in the calculation of linguistic change, 'population' refers not to the total number of speakers of a language, but to the number who belong to a single effective communications network. For many languages, including North American English, the two numbers are virtually the same, since radio, television and large-scale travel link the entire group together. Languages infrequently used on the radio (e.g. almost all American Indian languages, including Atsina) form single population groups only if all speakers live within easily travelled distances of each other. Cheyenne, for instance, has two populations, one in Montana, the other in Oklahoma; Cree has a dozen or more populations spread across Canada and the northern states; English forms scores or hundreds of populations, some small, like the Tristan da Cunha dialect, others numbering in the hundreds of millions, like "Standard American" or RP British.

On a global scale, the average population of a language is probably about 100,000 people. Assigning this a value of 1.00, the variation due to population size is

$$\left(\frac{5}{\log_{10}(\text{Population})} \right)^n \text{ times the basic rate of change (R),}$$

where n is between 1 and 3. If n is assigned a value of 2.00, a language with 1,000 speakers should change almost three times as fast as one with 100,000 speakers, while "Standard American" would have a rate of 0.4 times the norm or less. Slight alterations in the value of n increase or reduce the stated effect of population size; the correct value for human language as a whole is most likely between 1.00 and 2.00, i.e. population size has a small, but noticeable, effect on the rate of change.

5.2 Fragmentation

The degree of fragmentation (vs homogeneity) of a language has an important effect on the rate of change. Mathematically this variable is included under Population Size (5.1), since fragmentation produces two or more populations where there was formerly only one, but descriptively it is best considered separately.

Fragmentation is due to the separation of one part of the population from the rest, whether by geographical, political, or social barriers. The existence of these barriers can be observed only after the fact: if part of a language population moves to an island it may fragment into a new population (if travel is restricted, as on Tristan da Cunha) or remain part of the original group (as in the case of Old Norse/Old Icelandic until the fourteenth century, since large-scale communication continued to exist); a political boundary may divide the population (the classic example is the Rhenish fan) or have little effect (e.g. the provincial borders of western Canada); social barriers are the subject of a large and increasingly more scientific literature. In the absence of electronic media, sheer distance is an effective cause of fragmentation.

5.3 Areal Influences

As suggested in 1.2.5, areal influences may be quantifiable (after the fact) in terms of the degree of uniformity among neighbouring languages. It seems that large scale bi- or multi-lingualism is not a necessary factor: languages tend to share phonological (and other) features if they remain in contact for any length of time, e.g. the Northwest Coast of North America, India, or western Europe. The variables are the amount of contact, its duration, and the degree of similarity between the languages before contact (i.e. very dissimilar languages tend to borrow less). Relative prestige is not a factor that limits areal influence, though it may have some effect on its direction: Dravidian languages have borrowed as much from Indic as vice versa; Greek and the southern Slavic languages have about equal influence on each other; pidgins like Wes-Kos are more influenced by the substratum's phonology than the superstratum's.

5.4 The Effect of Diglossia

Where a large percentage of the population controls two distinct varieties of a single language or two related languages, there is invariably some degree of interinfluence. While areal influences do not require bilingualism (at least not on a large scale), diglossia has an effect only when a considerable part of the community is familiar with both languages or dialects. The variables are essentially the same as those listed in 5.3: amount of contact (percentage of bilinguals), duration of contact (number of generations of bilinguals), and degree of similarity before contact (not yet quantifiable). Mathematically the effects of areal influence and diglossia may be combined in a single formula, but the constants necessary to yield a numerical result have not been determined:

$a(\text{Pop}) \times b(\text{Dur}) \times c(\text{Sim}) \dots$ times the basic rate of change (R), where Pop = percentage of bilinguals (or "amount of contact"), Dur = duration of contact in generations, and Sim = degree of similarity, and a, b, c, etc. are undetermined constants. The formula is repeated for each pair of interacting languages or dialects, thus predicting that where there are many similar dialects in contact over a long period of time, their influence on each other will be very large.

5.5 Cultural Effects

I reject as possible variables such unquantifiable items as "the national character" proposed by Fodor (1965). The only variable I have considered from the cultural component is the degree of cultural conservatism: languages change in inverse ratio to their cultures' degree of conservatism, i.e. $R = \frac{A}{\text{Conservatism}}$... where A is an undetermined constant whose value will depend in part on the way "conservatism" is measured numerically.

The case of the Plains Algonquian languages examined in section 2 shows that this variable may fluctuate greatly over time. Like most other peoples who depend on hunting and gathering (with a little horticulture) as a way of life, the Algonquians are generally conservative when compared with pastoral or industrialized societies. This is reflected in the small amount of change in languages like Cree and Fox over the past three thousand years. It is suggested that the Great Plains Sound Shift reflects a sudden and enormously great change in the degree of conservatism: as the entire culture of the Plains Algonquian peoples was being reshaped (in a very short period of time) during their shift from the Woodlands to the Plains, their languages also underwent a corresponding shift.

If this is a general principle, all societies that have experienced similar catastrophic cultural changes should show similar results. Gradual cultural development does not have such an effect (though it is reflected in assigning a relatively low Conservatism index to the society involved): English did not go through a dramatic change with the advent of the Industrial Revolution, since it was a natural development within the framework of the previously-existing culture, it did not affect the entire English-speaking world simultaneously, and its linguistic effect was submerged in the large size of the population. Many languages which could be usefully compared to Atsina reacted to rapid cultural change by ceasing to exist (which is, of course, the greatest change that can occur): this was the case in Tasmania, much of Australia, and in a large percentage of North American languages. Those that have survived with little apparent change (e.g. many Athapaskan languages) have also experienced relatively little cultural change despite two or three centuries of contact with industrial society. Thus their cultures may be assigned very high values for conservatism, and this is reflected in their slow rates of linguistic change.

5.6 Literacy

While literacy is connected to cultural conservatism, it may have a

determinable effect of its own. The ability to read, especially, to read works written by previous generations, tends to retard the rate of change. Literacy will have a major effect only if a majority of the population can and does read noncontemporary books: there will be a lesser retardation if the only written materials are recent -- in this case the effect is merely one facet of the drag imposed by effective communication across a large population.

The variable for literacy is $n \sqrt{\frac{\text{Number of Illiterates}}{\text{Total Population}}}$ times the

basic rate (R), where n must be greater than 2 (otherwise Icelandic, with ca 98% literacy, would change at only 0.14 times the base rate), but not a very large number (at n = 20 the whole calculation becomes vacuous: all languages would score above 0.8R, most around 0.99R). I would suggest n = 5 as a working hypothesis.

Bright and Ramanujan (1964) have compared the rate of change in phonology, morphology and lexicon in Brahmin and non-Brahmin varieties of Tamil, Kannada and Tulu, three Dravidian languages of southern India. Tamil and Kannada have been literary languages for more than 1500 years while Tulu has no tradition of literacy and is seldom written.

Bright and Ramanujan find that in Tamil and Kannada the Brahmin dialects innovate by borrowing lexical items (often retaining foreign phonemes and combinations) and by using old words in new ways, perhaps in an effort to maintain a difference between the Brahmin and non-Brahmin varieties; the non-Brahmin dialects innovate chiefly in the (native) phonological and morphological systems, the parts of the grammar which are relatively static in Brahmin speech. In Tulu the Brahmin dialect is also characterized by phonological and lexical borrowing and semantic changes, but Bright and Ramanujan claim that Brahmin and non-Brahmin Tulu have undergone about equal amounts of change in phonology and morphology. They conclude (1964:1109) that "literacy, wherever it is present in human societies, acts as a brake on processes of linguistic change". Since the other variables are essentially the same for both varieties of these languages, including the degree of conservatism, the existence of a separate literacy variable and its retarding effect are confirmed by their research.

5.7 General Formula for Rate of Change

The variables isolated in sections 5.1-6 were stated in such a way that their influences are compounded in the general formula. A language spoken by a very small, nonliterate, and culturally innovative group will change at a much faster rate than one in which only one of these factors is significantly different than the norm. Unfortunately, I have been unable to suggest a numerical value for the effects of diglossia and areal influences: for Icelandic the value must be very small (i.e. little effect), while for Plains Algonquian and Wes-Kos pidgin the numbers are large. Similarly, the degree of conservatism has not been stated in a way that will yield real numbers; the substitution of a formula based on the number of cultural traits changed by each generation (times an unknown constant) might fill the bill.

The general formula is

$$R = P \cdot D \cdot C \cdot L \cdot \dots \text{ where}$$

R = the general rate of change in a phonological system, in number of changes per generation;

$$P = \frac{5}{\log_{10}(\text{Population})} \cdot n.$$

D = the effect of areal influences and diglossia, calculated for each pair of languages or dialects from the following formula and multiplied together: a(Percentage of bilinguals) x b(duration of contact in generations) x c(degree of similarity);

C = degree of cultural conservatism, from the formula $\frac{A}{\text{Conservatism}}$, perhaps better from the formula

$$\frac{(\text{No. of traits in generation N}) - (\text{No. of traits in generation N+1})}{(\text{Number of traits shared by N and N+1}) \times K}$$

L = the effect of literacy, calculated from the formula

$$L = \frac{n}{\sqrt{\frac{\text{Number of Illiterates}}{\text{Total Population}}}}$$

The trailing dots (...) in the general formula represent further variables which may be found necessary to account for the rates of change of all the languages of the world. It will probably also be necessary to subdivide some of the factors already mentioned in a more rigorous formulation.

The formula yields a rate of change valid only for the two generations considered in C, and only as long as the other variables, such as population size, have not changed. For longer periods of time each of P, D, C and L must be calculated anew for each generation and then averaged.

5.8 Testing the Formula

I have attempted to give a general formula in a form that lends itself to testing in a scientific manner, but before it can be made to yield actual numerical values for the rate of change, the constants (n in formulas P and L, A or K in formula C, a, b and c in formula D) must be determined on the basis of a large sample of languages. Unfortunately, almost all the languages which have long recorded histories belong to a small number of language families; the areal and diglossic factors may be seriously skewed if testing is limited to languages of the Mediterranean basin, India, and the Far East. A further complication is that few languages in the modern world are direct descendents of their literary ancestors: modern standard English is not a lineal descendent of Old West Saxon English, nor is Sanskrit the ancestor of modern Hindi. Over a very long period of time this may not matter much, so the differences between Vedic Sanskrit and modern Hindi, or between Mycenaean and modern Greek might be usefully calculated.

I have left unsolved the problem of how to count linguistic changes. In Old English /f/ becomes [v] in certain environments; in Middle English the change is /f/ becomes /v/. Are we to count this as a change between Pre-Old English and Old English, and another between OE and ME; only as a change between Pre-OE and OE; or only between OE and ME? If an entire class of phonemes changes (e.g. the Germanic sound shifts) do we count one or many changes? Wes-Kos has t from standard English θ, which in turn is from PIE *t: is this two changes, or none?

Until these and other problems are solved, the formula presented here will, like so many other statements in the social sciences, remain unprovable and unusable. Unlike the model described by Fodor (1965:72), however, it can be tested once the numerical values of the variables and constants have been determined from a small number of languages.

Footnotes

¹Compare a classification of Indo-European which set up a Britannic branch, consisting of modern English, Welsh, and Old Norman French: there would be a number of features -- phonological, morphological, syntactic and lexical -- unique to the group, but each member would also share many innovations with non-Britannic languages; their common ancestor is indistinguishable from PIE itself.

²Abbreviations and conventions: Ar Arapaho, At Atsina, Bl Blackfoot, Ch Cheyenne, Nw Nawathinehena; other language names are not abbreviated. Dates without associated authors' names are those of field work on Atsina: 1772 Graham (1969), 1786 Umfreville (1790), 1800 Fidler (MS), 1834 Maximilian (1906), 1855 Hayden (1863), 1862 Morgan (1871), 1899 Kroeber (1916); elsewhere forms from Kroeber are marked K. The standard introduction to Algonquian terminology and the reconstruction of Proto-Algonquian is Bloomfield 1946.

³The history of Munsee was described by Ives Goddard at the 1978 Algonquian conference. The mergers in Moose Cree and Kickapoo were worked out by myself (Cree data from field work at Moose Factory in 1973, Kickapoo from the publications of William Jones and Paul Voorhis).

⁴The basic correspondences between Arapaho-Atsina and Proto-Algonquian were worked out by Michelson (1935). A much more readable and more detailed study is Goddard (1974), but I do not always agree with his ordering of the rules.

⁵A slightly more detailed discussion of the developments of Proto-Algonquian *θ and *l is included in Pentland (1978:116-117); for a full description see Pentland (1979b).

⁶There are traces of an n-dialect in northern New England (Siebert 1975:312) and in the Chesapeake Bay area (Pentland 1979b:331).

⁷Underlying *wō merges with *ō in all Algonquian languages except after a vowel, e.g. *ōlwa 'he howls' (**wōlwa) > Swampy Cree ōnow, reduplicated wāwōnow, Ojibwa wāwōno. There is no evidence for *yō, but such a combination would occur if any language has a reflex of *naky-ohθēwa 'he meets (someone) walking'.

⁸The Blackfoot sound changes have been sufficiently worked out to show that it too derives from ordinary Proto-Algonquian (Taylor 1960), but Blackfoot has rebuilt its vocabulary by creating new combinations of Algonquian morphemes: few full words can be cited as cognates.

⁹Hallr Teitsson's feature [+open] combines modern [+low], [-back] and [-round]: as Haugen (1972:37) observes, "the lips are obviously more open when low vowels are spoken than high ones, but so are they -- in a horizontal dimension -- when spread vowels are compared with rounded ones."

¹⁰The scribe omitted these two examples in copying the treatise.

¹¹It is likely that nasalization was not phonemic with short vowels (Haugen 1972:38-39, 40-41): the nasalized variants occur only next to nasal consonants. While I have followed the manuscript in writing nasalization here, a better analysis would have the nine vowels occurring with length or nasalization, i.e. $V : \bar{V} : \tilde{V}$. The two diacritics merge (as length) by the end of the twelfth century (3.1.7).

¹²Compare the reflexes of the short vowels before ng, nk: a e i o u ϕ become [a \underline{u} e \underline{i} i(i) o \underline{y} u(u) ϕ \underline{y}] (Stefán Einarsson 1949:9).

¹³The fact that the merger of i, y with e, ϕ must be "fiercely fought on all levels of instruction and education" (Hreinn Benediktsson 1959:306) is a clear indication that it is spreading across the island.

¹⁴Schneider (1966:169) derives "tannap" from 'stand up'. The texts have (266) "Dem boby tannap leckey stick" 'their breasts ___ like sticks/trees', and (273) "traí tannap smoll fo Dodo-bar" '[if you're in the neighbourhood] try to ___ for a while at the D.'.

References

- Bloomfield, Leonard. 1946. Algonquian. *Linguistic Structures of Native America*, by Harry Hoijer et al., 85-129. Viking Fund Publications in Anthropology, 6.
- Bright, William & A. K. Ramanujan. 1964. Sociolinguistic variation and language change. *Proceedings of the Ninth International Congress of Linguists*, ed. by Horace G. Lunt, 1107-1114. The Hague: Mouton.
- Curtis, Edward S. 1909. *The North American Indian*, vol. 5. Cambridge, Mass.: the author.
- Doke, C. M. 1938. The earliest records of Bantu. *Bantu Studies* 12(2); reprinted in *Contributions to the History of Bantu Linguistics*, by C. M. Doke and D. T. Cole, 1-7. Johannesburg: Witwatersrand University Press.
- Eyongetah, Tambi & Robert Brain. 1974. *A History of the Cameroon*. London: Longman.
- Fidler, Peter. 1800. *Journal from Cumb[erland] House up the South Branch to the Junction of Red Deers & Bad River*. MS in Hudson's Bay Company archives (Winnipeg, Manitoba), B.34/a/1.
- Flannery, Regina. 1946. Men's and women's speech in Gros Ventre. *International Journal of American Linguistics* 12:133-135.

- Fodor, István. 1965. *The Rate of Linguistic Change*. The Hague: Mouton.
- Forbis, Richard G. 1968. Alberta. *The Northwestern Plains: a Symposium*, ed. by Warren W. Caldwell, 37-44. Billings, Montana: Rocky Mountain College, Center for Indian Studies.
- Goddard, Ives. 1967a. Notes on the genetic classification of the Algonquian languages. *National Museum of Canada Bulletin* 214:7-12.
- _____. 1967b. The Algonquian independent indicative. *National Museum of Canada Bulletin* 214:66-106.
- _____. 1974. An outline of the historical phonology of Munsee. Unpublished MS read at the 10th Algonquian Conference, Fredericton, N.B., October 27, 1978.
- Graham, Andrew. 1969. *Observations on Hudson's Bay 1767-91*, ed. by Glyndwr Williams. Hudson's Bay Record Society Publication 27.
- Haugen, Einar. 1972. *First Grammatical Treatise: the earliest Germanic phonology*, 2nd (rev.) ed. London: Longman.
- Hayden, Ferdinand V. 1863. Contributions to the ethnography and philology of the Indian tribes of the Missouri valley. *American Philosophical Society Transactions* n.s. 12:231-461.
- Hreinn Benediktsson. 1959. The vowel system of Icelandic: a survey of its history. *Word* 15:282-312.
- Jones, Daniel & A. C. Gimson. 1977. *Everyman's English Pronouncing Dictionary*, 14th ed. London: J. M. Dent & Sons.
- Kroeber, Alfred L. 1916. Arapaho dialects. *University of California Publications in American Archaeology and Ethnology* 12:71-138.
- Maximilian, Prince of Wied-Neuwied. 1906. *Travels in the Interior of North America*, ed. by R. G. Thwaites. *Early Western Travels*, v. 22-24. Cleveland: Arthur H. Clark.
- Michelson, Truman. 1912. Preliminary report on the linguistic classification of Algonquian tribes. *Bureau of American Ethnology Annual Report* 28:221-290b.
- _____. 1935. Phonetic shifts in Algonquian languages. *International Journal of American Linguistics* 8:131-171.
- Morgan, Lewis Henry. 1871. *Systems of Consanguinity and Affinity of the Human Family*. Smithsonian Contributions to Knowledge, 218.
- Ngangoum, F. B. 1970. *Le bamiléké des Fe'fe', grammaire descriptive usuelle*. Saint-Léger-Vauban (France): Abbaye Sainte-Marie de la Pierre-qui-vire.

- Pentland, David H. 1976. In defence of Edward Umfreville. *Papers of the Seventh Algonquian Conference, 1975*, ed. by William Cowan, 62-105. Ottawa: Carleton University.
- _____. 1978. A historical overview of Cree dialects. *Papers of the Ninth Algonquian Conference*, ed. by William Cowan, 104-126. Ottawa: Carleton University.
- _____. 1979a. Does "Eastern Algonquian" really exist? *Algonquian Linguistics* 4(4) [forthcoming].
- _____. 1979b. *Algonquian Historical Phonology*. Unpublished Ph.D. dissertation, University of Toronto.
- Ray, Arthur J. 1974. *Indians in the Fur Trade*. Toronto: University of Toronto Press.
- Salzmann, Zdeněk. 1960. Two brief contributions towards Arapaho linguistic history. *Anthropological Linguistics* 1:9-6-10.
- Schneider, Gilbert D. 1966. *West African Pidgin-English, a descriptive linguistic analysis with texts and glossary from the Cameroons area*. Athens, Ohio: the author.
- Siebert, Frank T., Jr. 1941. Certain Proto-Algonquian consonant clusters. *Language* 17:298-303.
- _____. 1975. Resurrecting Virginia Algonquian from the dead: the reconstituted and historical phonology of Powhatan. *Studies in Southeastern Indian Languages*, ed. by James M. Crawford, 285-453. Athens: University of Georgia Press.
- Stefán Einarsson. 1949. *Icelandic: grammar, texts, glossary*. Baltimore: Johns Hopkins Press.
- Swanton, John R. 1930. Some neglected data bearing on Cheyenne, Chippewa, and Dakota history. *American Anthropologist* 32:156-160.
- Taylor, Allan R. 1960. Blackfoot historical phonology: a preliminary study. Unpublished term paper.
- _____. 1967. Some observations on a comparative Arapaho-Atsina lexicon. *National Museum of Canada Bulletin* 214:113-127.
- _____. 1976. Words for buffalo. *International Journal of American Linguistics* 42:165-166.
- Umfreville, Edward. 1790. *The Present State of Hudson's Bay*. London: Charles Stalker.
- Wolfart, H. Christoph. 1973. Boundary maintenance in Algonquian: a linguistic study of Island Lake, Manitoba. *American Anthropologist* 75:1305-1323.

