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Foreword

The Department of Linguistics of the University of Victoria is pleased to present the latest issue of the *Working Papers of the Linguistics Circle of the University of Victoria.* Volume 6, No. 1, of the *Working Papers* includes papers representative of current research on language and linguistics at the University of Victoria. It is the editorial policy of the *Working Papers* to include, whenever possible, an even representation of work by graduate students and established scholars.

The articles published in this volume are working papers, and inclusion in *WPLC* does not preclude subsequent publication elsewhere. As working papers, the articles presented here are subject to reconsideration and revision, and comments regarding their form and content are welcome.

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BRIBRI NASAL HARMONY FROM THE VANTAGE POINT OF THE UNIVERSAL THEORY OF HARMONY

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1. INTRODUCTION

After surveying vowel harmony processes in a number of languages, Tohsaku (1983) proposed a formal theory of vowel harmony. The formal devices that are part of this theory are developed so that they can capture significant generalizations regarding this phonological process. Specifically, these formal devices can a) distinguish the universal properties of vowel harmony from its language-particular properties, b) represent a natural, common or expected process in a formally simple, natural fashion, and c) capture significant similarities and differences among vowel harmony and such related processes as assimilation, and so on. Later, Tohsaku (In Press a) demonstrated that the proposed theory also can account for the universal properties of nasal harmony, and that it has more explanatory power than originally conceived.

It is obvious that a phonological theory incorporating an account of phonological universals into its general metatheoretical model has many advantages. For example, predictable features of a given process are attributed to the theory, while unpredictable, idiosyncratic features are assigned to language-specific systems. Thus, we need not repeat information pertaining to universals in the description of each process, which leads to a simple, natural analysis. More importantly, in terms of this kind of theory, it is possible to distinguish formal properties of each process from its substantive properties. In this sense, the theory attains a high level of explanatory power.

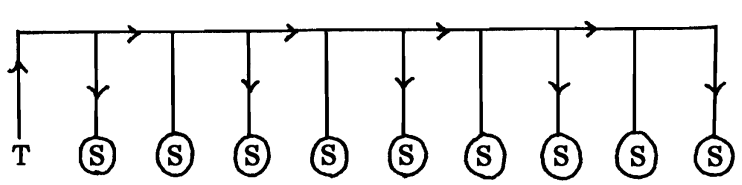
In this paper, I will apply the theory proposed in Tohsaku (1983, In Press a) to the analysis of Bribri nasal harmony and demonstrate that this theory makes it possible to analyze a seemingly complicated phonological process in a simple, natural manner. Section Two of this paper will consider four different types of non-harmonizing segments which are commonly observed in vowel harmony and nasal harmony. Section Three will go over Bribri nasal harmony. Section Four will briefly describe the formal devices proposed in Tohsaku (1983, In Press a). In Section Five, I will demonstrate the analysis of Bribri nasal harmony in terms of these new formal devices.

2. NON-HARMONIZING SEGMENTS IN HARMONY PROCESSES

Tohsaku (1983) examined various vowel harmony processes and identified their universal characteristics. Tohsaku also pointed out in his study of nasal harmony (In Press a) that most of these universal characteristics are shared by nasal harmony processes. For instance, some types of segments appear repeatedly in vowel and nasal harmony processes. In this section, we will look at the behavior of these segments.

Any harmony process has a type of segment which initiates the process, i.e. which determines the quality of segments affected by the assimilatory process. This type of segment is called a *triggering segment*. The function of a triggering segment (T) can be illustrated as follows:

(1)

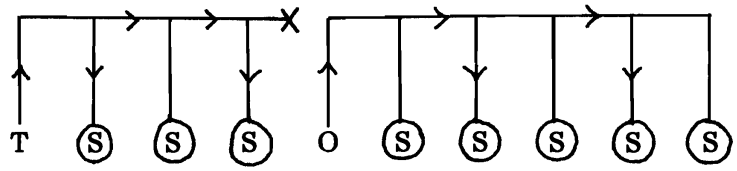


[1]

In illustration (1), the line with an arrow represents a flow or direction of a harmony process. Circled segments represent those affected by harmony. These segments are called *target segments* or *harmonizing segments*. In vowel harmony, the triggering segment is typically a vowel, while in nasal harmony, it can be either a nasal vowel or a nasal consonant. A triggering segment can be morphologically determined (e.g. a root-initial vowel) or phonologically determined (e.g. any [+ round] vowel in the word). In some harmony processes, such morphological features as [+ plural] and [+ 3rd person] trigger the process. Tohsaku (In Press b) claims that the directionality of harmony is universally bidirectional when the triggering segment is morphologically determined. On the other hand, it must be language-specifically specified when the triggering segment is phonologically determined.

The second type of segment is an *opaque segment*, which stops harmony initiated by a triggering segment (or other opaque segments) and triggers a new harmony process. Thus, it defines a new domain of harmony. The function of an opaque segment can be illustrated as follows:

(2)



In (2), the opaque segment is marked with the symbol O. The flow of harmony initiated by the triggering segment T is stopped by the opaque vowel and it, in turn, triggers a new harmony process. A triggering segment and an opaque segment differ in the value of a harmonizing feature. For instance, if [+ ATR] vowels are triggering vowels, [- ATR] vowels could be opaque.[2] Nasal harmony, in which [+ nasal] segments typically trigger the process, does not have an opaque segment, since [- nasal] segments cannot trigger the harmony. Tohsaku (1983) points out that the operation of a triggering vowel universally precedes that of an opaque vowel in a vowel harmony process when it has an opaque vowel.

The third type of segment is a *neutral segment*, which is represented by the symbol N in (3) below. This segment is not affected by harmony. The flow of harmony passes over it. The behavior of a neutral segment can be illustrated as follows:

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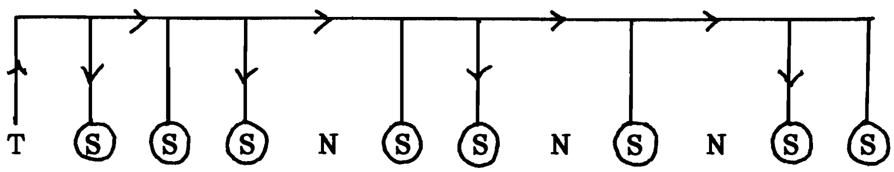
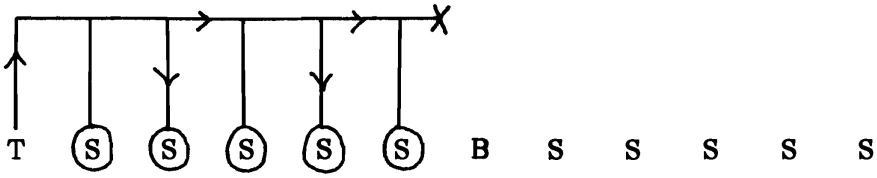
[1] S represents a segment.
[2] ATR stands for the phonetic feature *Advanced Tongue Root*.

(3)



The fourth and last type of segment commonly observed in harmony processes is a *blocking segment*, which is shown with the symbol B in (4). This type of segment blocks the flow of harmony triggered by a triggering segment or an opaque segment. Unlike an opaque segment, however, it cannot define a new domain of harmony, i.e. it cannot trigger a new process of harmony as illustrated in (4):

(4)



In (4), it must be noted that all segments after a blocking segment are not circled, thus, not harmonized.

The four types of segments discussed above are not harmonized, contrasted with target or harmonizing segments, in harmony processes. Therefore, these four types of segments are called *non-harmonizing segments.*

3. BRIBRI NASAL HARMONY: FACTS

In this section, we will examine the nasal harmony process of Bribri and consider the behavior of the non-harmonizing segments discussed in the preceding section. The data presented here are all from Constenla (1981, 1985).

Bribri has an underlying contrast between oral and nasal vowels in a tonic syllable.[3] In other words, the occurrence of oral and nasal vowels in this context is unpredictable. Underlyingly, only oral vowels appear in an atonic syllable. Besides, there is no underlying nasal consonant in this language. The occurrence of surface atonic nasal vowels and nasal consonants is accounted for as the result of a nasal harmony process triggered by a tonic nasal vowel. Thus, a tonic nasal vowel is the triggering segment of this nasal harmony process. The possible harmonizing segments of this nasal harmony are atonic vowels and voiced consonants. Let us consider the following examples:

(5)	(a)	/d͡ʒaṹ/ (T)	[ɲã̀ṹ][4] (↑↑T)	'my pot'
	(b)	/d͡ʒaú/	[d͡ʒàú]	'my house'

---

[3] This language has four different tone types: high /ˊ/, low /ˋ/, high-low /ˆ/, and low-high /ˇ/.

[4] In these phonological and phonetic representations [̯] indicates lesser loudness and length. See Constenla (1981). /ɺ/ is an alveolar lateral flap.

(c) /dabṹ/ [nãmṹ] 'feline'
T T

(d) /baũ̂k/ [màũ̂k] 'to tie'
T T

In this nasal harmony process, voiceless consonants function as a blocking segment. Consider the following examples:

(6) (a) /šakaľã̂/ [šakãľã̂] 'smoke'
B T B T

(b) /ba͡tsṹ/ [bà͡tsṹ] 'hummingbird'
B T B T

Also, tonic vowels are blocking segments.

(7) (a) /bă̋ṹk/ [bă̋ũ̀k] 'to heat'
BT BT

(b) /d͡ʒábĭ̀/ [d͡ʒámĭ̀] 'relative'
B T B T

As seen from the following examples, the directionality of this nasal harmony process is limited to leftwards:

(8) (a) /bad͡ʒã̂ľkà/ [mãnã̂ľkà] 'three pounds'
T T

*[mãnã̂ľkà]

(b) /kalẽ̆́b/ [kãlẽ̆́b] 'catfish'
T T

*[kãlẽ̆́m][5]

The Bribri harmony process does not have a neutral segment.

This nasal harmony process can be summarized as follows:

(9) Bribri Nasal Harmony
(a) Triggering Segments: Tonic nasal vowels
(b) Blocking Segments: Voiceless consonants and Tonic oral vowels
(c) Directionality: Leftward only
(d) Harmonizing Feature: [+ nasal]

---

5 Later, a local nasalization rule changes [kaľẽ́b] to [kaľẽ́m].

According to Constenla (1985), Northern Cabécar, a neighboring sister language of Bribri, also has a nasal harmony process. In the northern dialect of this language, Constenla reports that some voiceless consonants do not block a nasalization process. Consider the following example:

(10) /batsú/ [mãtsṹ] 'hummingbird'

In (10), the voiceless consonant [ts] functions as a neutral segment, so that nasalization passes over this segment.

4. A FORMAL THEORY OF HARMONY

Tohsaku (1983) proposed a non-linear analysis of vowel harmony which can account for the general, universal characteristics of this process, i.e. features which are commonly observed in this process, as well as the four types of segments discussed above, in a simple and natural way. Tohsaku (In Press a) further demonstrated that this formal theory of vowel harmony can account for the universal features of nasal harmony with a little modification.

This new theory of harmony requires the following set of formal devices:

(11) A Set of Formal Devices
- (a) Projection
- (b) Foot Assignment
- (c) Labeling Assignment
- (d) Percolation

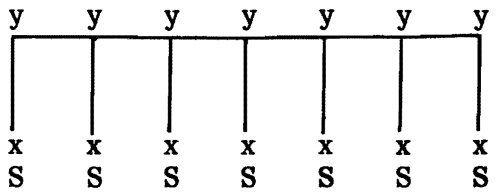
All harmony rules necessitate these four devices or subrules, which apply in the order shown above.

The notion of *projection* was first proposed by Vergnaud (1976). Halle (1979: vi) defines it concisely as "...given a phonological representation speakers readily construct various subrepresentations by deleting systematically certain specified items from the former". Many phonological rules effectively disregard certain segments and operate only on a string of specified segments. Vowel harmony processes apply to all and only vowels in the domain of a word, and consonants do not interfere with the application of vowel harmony nor are they affected by it. That is to say, vowel harmony effectively and systematically disregards consonants and operates on a subrepresentation in which all consonants are deleted, i.e. it operates only on the [+ syllabic] projection. I claim that vowel harmony operates universally on the [+ syllabic] projection in the domain of a word, unless otherwise stipulated. Vocalic segments separated by intervening consonants in the underlying representation become adjacent to one another after the [+ syllabic] projection. In this way, the phonological rule of vowel harmony need not refer to any consonants. Thus, if we use projection, it is possible to eliminate all variables from the phonological rule of vowel harmony and simplify it. On the other hand, in nasal harmony, all segments in a word are projected, unless otherwise specified in a language-particular rule. Arguments for this type of projection in nasal harmony are demonstrated in Tohsaku (In Preparation).

Segments in particular projection are gathered into a constituent-like grouping, according to Vergnaud (1976). Specifically, projected segments are grouped so as to join together into a tree-like structure called a *foot*. I will call this grouping *foot*

assignment. Right-branching and left-branching trees are widely used in Metrical Phonology, while multi-branching trees are predominantly used in Autosegmental Phonology.[6] It would be unnecessary to mention the usefulness of these trees for the analysis of, especially, stress and tone. I use the following type of tree structure. Here S represents a segment projected by the vowel harmony or nasal harmony projection.

(12)



This structure looks like a wisteria trellis or grape trellis, so I will call this structure *trellis-branching tree.* Arguments for the trellis-branching rather than other branchings in the analysis of harmony are shown in Tohsaku (1983). In the trellis-branching tree structure in (12), x is called a tip, while y is called a node.

Vergnaud (1976), furthermore, claims that segments gathered into a single tree could share some features specified by a rule. Those features specified by a rule can move through a tree. This moving process is called *percolation.* In theories which use a right-branching or left-branching tree, percolation usually takes place from the head, tail, or highest node of a given tree.[7] If features move from one of the segments grouped into a trellis-branching tree, we must clearly specify which segment initiates the percolation of a specified feature, since the trellis-branching tree structurely does not have a head, tail, or a highest node from which Vergnaud claims percolation is initiated.

In the present framework, the mode of percolation is determined by labels assigned to parts of the trellis-branching tree, specifically, nodes or tips. After the vowel harmony or nasal harmony projection and foot assignment derive a subrepresentation for vowel harmony or nasal harmony, *labeling assignment* rules apply. Two labels are needed in the analysis of harmony: one is a Percolator (P)-label and the other is a Cork (C)-label. The assignment of these labels is language-specific, so vowel harmony or nasal harmony rules in each language must specify where these labels are assigned in the tree. The functions of labels, however, is determined universally, so that a language-specific rule of harmony processes need not include information about their functions.

A P-label has two functions: (a) it initiates percolation from the segment to which it is assigned; (b) it stops percolation initiated by any other P-label(s). A C-label has only one function: it stops the flow of percolation initiated by a P-label.

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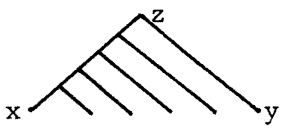
[6] These three types of trees are illustrated as follows:

left-branching right-branching multi-branching

[7] In the following left-branching tree, x is the head, y is the tail, and z is the highest node.

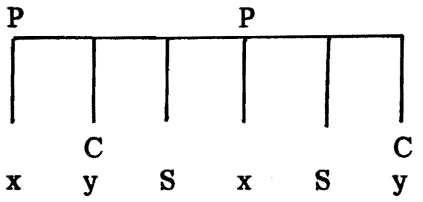


The following is a typical labeling assignment (sub)rule used in a rule of harmony:

(13) Schemata for Labeling Assignment Rules
(a) Assign a P-label to a node immediately governing a segment x.
(b) Assign a C-label to a tip immediately governing a segment y.

These rules apply to the subrepresentation for vowel harmony or nasal harmony, and the following representation is derived:

(14)



As seen in (14), more than one labeling assignment rule can apply to a single tree, so long as there is a segment which satisfies the condition described in labeling assignment rules.

Classes of segments which typically appear in harmony processes are accounted for by the following labeling modes:

15) (a) Triggering: a P-label assigned to its node
(b) Opaque: a P-label assigned to its node
(c) Neutral: a C-label assigned to its tip
(d) Blocking: a C-label assigned to its node

After labeling assignment rules assign labels to certain parts of trees (i.e. tips or nodes), percolation takes place. The following is a typical percolation rule for harmony processes:

(16) [+ featureα] percolates.

Percolation features are determined language-specifically, but the mode of percolation is determined by the universal function of the labels assigned to trellis-branching trees, and by the universal principle of percolation shown below:

(17) The Percolation Principle
The value for specified features of a segment with a P-label are percolated and spread to other segments where they distribute or supplant the value for these features.

Unless otherwise stipulated, percolation proceeds both rightwards and leftwards in a tree. In vowel and nasal harmony processes whose triggering segments are phonologically determined, the directionality is unpredictable. Therefore, it is specified in a language-specific rule. In these processes, percolation is restricted only to rightwards or leftwards. I shall call rightward percolation, *perc-right*, and leftward percolation, *perc-left*.

5. BRIBRI NASAL HARMONY: ANALYSIS

In this section, I will show an analysis of Bribri nasal harmony in the theoretical framework presented in the preceding section.

It is considered that the universal projection for nasal harmony, i.e. the projection of all segments inside a word, applies to this nasal harmony process. Therefore, we need not specifically include this information in the description of Bribri nasal harmony. Those segments projected are automatically assigned a trellis-branching tree. This is also taken care of by the theory.

In the theory introduced above, non-harmonizing segments are accounted for by labels. The Bribri nasal harmony rule has the following labeling assignment rules:

(18) (a) Assign a P-label to the node immediately governing a tonic nasal vowel.
(b) Assign a C-label to the node immediately governing a voiceless consonant or a tonic oral vowel.

The harmonizing feature is specified by the following percolation rule:

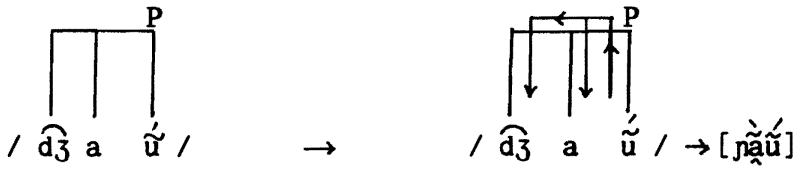
(19) [+ nasal] percs-left.

As discussed in Sections Two and Four, when a triggering segment is phonologically determined, the directionality of harmony must be specified in a language-specific rule. In Bribri, the triggering segment is a tonic nasal vowel, thus, phonologically determined. Therefore, the directionality is specified as 'percs-left' in the above rule.

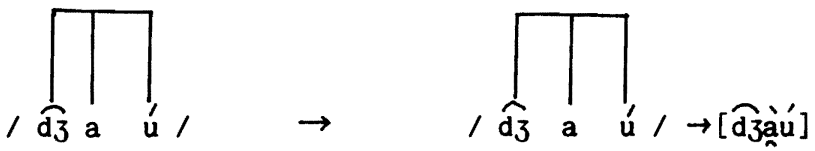
Let us apply these rules to some examples. In the following derivations, I will omit the universal projection and foot assignment. Instead, I will show the derivation after the application of these two universal rules.

The following is the derivation of (5a) 'my pot' and (5b) 'my house'.

(20) (a) Labeling Assignment Percolation



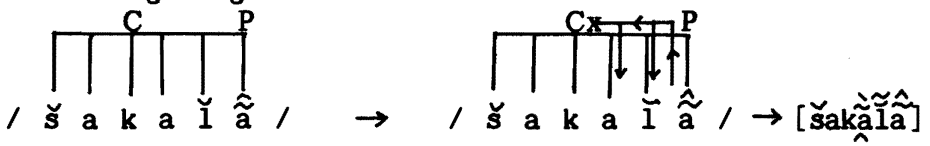
(b)



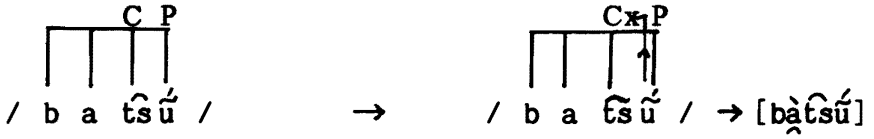
In (20a), the feature [+ nasal] is percolated from the word-final /u/, to which a P-label is assigned, and the remaining segments are nasalized following the Percolation Principle (17). In (20b), however, no P-label is assigned since there is no segment which satisfies the structural description of the rule (18a) above. Therefore, nothing takes place in this word.

Next, let us consider the derivation of (6a) 'smoke' and (6b) 'hummingbird'.

(21) (a) Labeling Assignment Percolation

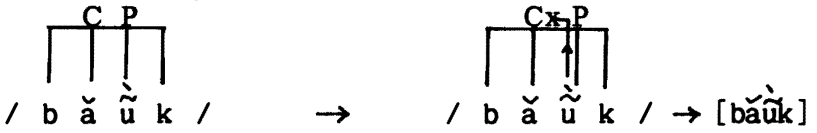


(b)

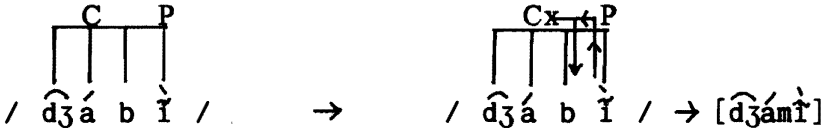


In these words, the node governing a tonal oral vowel is assigned a C-label. By the universal function of a C-label, the percolation is stopped as shown by an X in (21). The same is true with the derivation of (7a) 'to heat' and (7b) 'relative'.

(22) (a) Labeling Assignment Percolation



(b)



The node governing a tonic oral vowel is assigned a C-label. Therefore, percolation is stopped there.

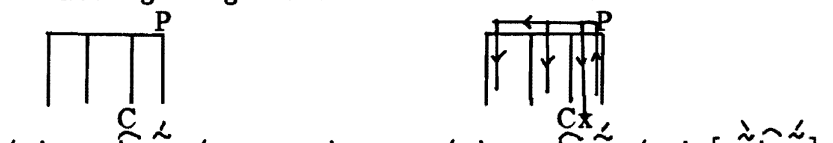
Let us consider the derivation of (8a) 'three pounds'.

(23) Labeling Assignment Percolation

Although /l̆/ is a possible harmonizing segment, the percolation is restricted to leftward direction by percolation rule (19), so that it is not nasalized.

As discussed in Section Three, in northern Cabécar, some voiceless consonants function as neutral segments. It is considered that these consonants are assigned a C-label at their tip in the tree, instead of a C-label at their node. Let us consider the derivation of (10) 'hummingbird'.

(24) Labeling Assignment Percolation



In (24), the percolation initiated by the word-final /u/ is stopped by the C-label at the tip of /t͡s/. Therefore, this voiceless consonant is not affected by the percolation process. However, there is nothing to stop the percolation at the node immediately governing /t͡s/. The percolation continues further forward, and /b/ and /a/, which are possible harmonizing segments in this language, are nasalized.

In conclusion, the universal theory of harmony presented here, to a great extent, simplifies the description of Bribri nasal harmony. All that we have to specify in this language-specific rule are: (a) non-harmonizing segments, (b) harmonizing feature(s), and (c) the directionality. The function of non-harmonizing segments and the mode of harmony are accounted for by this universal theory. Unlike traditional phonological theory, we need not specify them repeatedly in language-specific rules.

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INTERIOR GLOTTALIZATION AND THE SUFFIX -(V)P IN LILLOOET, SHUSWAP AND THOMPSON

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I. INTRODUCTION

Lillooet, Shuswap and Thompson belong to the Interior branch of the Salish (or Salishan) language family, and are spoken in British Columbia, Canada. (For a map of the Salish language area, plus a general introduction to Salish, see Thompson 1979.) In what follows, I discuss two aspectual devices in Lillooet, Shuswap and Thompson, in sections 3-7. General information on the phonology of these languages is given in section 2. Lillooet material is taken from Van Eijk 1985,[1] Shuswap material is from Kuipers 1974, and Thompson material is from Thompson and Thompson 1980. Lillooet forms marked F are from the northern dialect (spoken around Fountain), and forms marked M are from the southern dialect (spoken around Mount Currie); both dialects are completely mutually intelligible; forms bearing no marker are the same in both dialects.

2. PHONOLOGY: GENERAL INFORMATION

Lillooet, Shuswap and Thompson share the following consonants: p p̓ t c c̓ k k̓ kʷ k̓ʷ q q̓ qʷ q̓ʷ ɬ s x xʷ x̌ x̌ʷ h ʔ m m̓ n n̓ l l̓ y y̓ ɣ ɣ̓ ʕ ʕʷ ʕ̓ʷ w w̓. (The superscript ' indicates glottalization.)[2] Lillooet and Thompson also have λ̓, while Shuswap has t̓ (the latter pronounced [λ̓] or [t̓], see Kuipers 1974: 21). Lillooet and Thompson also have t̓ in a few loan words. In addition, Lillooet and Thompson have z z and velarized ẓ ṣ, while Lillooet also has velarized ḷ ḷ̓. (Lillooet ṣ resembles Arabic ṣād, while ḷ ḷ̓ resemble English 'dark l' of 'pill'.) Moreover, Lillooet and Thompson have ʕ̓. (In Shuswap, ʕ̓ coincides with ʔ, see Kuipers 1974, section 1.3). As for vowels, Lillooet has a i u ə (in broad phonetics [ɛ e o ə]), and velarized ạ i̯ u̯ ə̯ [a ɛ/ė ɔ ʌ].[3] Shuswap falls into

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[1] Lillooet data were collected during various periods from 1972 to 1984. Thanks are due to the Netherlands Organization for the Advancement of Pure Research (ZWO), the Ts'zil Board of Education at Mount Currie, British Columbia, and the Mount Currie Indian Band, for enabling me to carry out research on the Lillooet language. I am most deeply indebted to my Lillooet consultants for their information, assistance and advice. The hospitality of the University of Victoria, with which I am currently affiliated as a Visiting Scholar, is deeply appreciated.

[2] Kuipers (1974) uses λ instead of ɬ, and he uses ° instead of ʷ to indicate labialization. Thompson and Thompson (1980) use x̣ and x̣ʷ instead of x̌ x̌ʷ. In this article, all consonant symbols for all three languages are standardized according to the symbols given in section 2. However, vowel symbols in the Shuswap and Thompson examples are those that Kuipers and Thompson and Thompson use.

[3] Note that a and i̯ overlap phonetically in [ɛ]. The phonetic realization [ė]

two major dialects: Western (described in Kuipers 1974) and Eastern. Both dialects have e i u ə a o ʌ (corresponding to Lillooet a i u ə ạ ụ ə̣), while Eastern Shuswap (which is not reflected in the discussion below) also has a counterpart to Lillooet i̱. Thompson has e i u ə a i̱ o ə̣ (corresponding to Lillooet a i u ə ạ i̱ ụ ə̣). The favourite root shape in these languages is CVC. Lillooet and Thompson (but not Shuswap) allow ə to occur under the stress. All three languages delete or insert unstressed ə under certain morphophonemic conditions. The vowel ə̣/ʌ is rare in all three languages. (In particular, it is difficult to find roots which have ə̣/ʌ and also employ any of the aspectual devices discussed below. We therefore leave roots with ə̣/ʌ out of consideration in this article.)

3. ASPECT IN LILLOOET, SHUSWAP AND THOMPSON

Like other Salish languages, Lillooet, Shuswap and Thompson have a complex aspectual system. (For our definition of 'aspect' we follow Comrie (1983: 3): "aspects are different ways of viewing the internal temporal constituency of a situation". See Thompson 1979: 733-736 for a general discussion of Salish aspect.) Many details of the aspectual systems of Salish languages are still unclear. However, two aspectual devices have been described in sufficient detail to permit a contrastive analysis. These devices are (1) 'interior glottalization', which consists of the insertion of the glottal stop (ʔ) adjacent to a root-vowel, (2) the addition of a suffix -p or -Vp to a root. Both interior glottalization and the affixation of -(V)p have an inchoative function (at least in Lillooet and Thompson). Moreover, these devices are largely in complementary distribution on the basis of the shapes of the roots involved. I discuss the Lillooet facts in section 4, Shuswap in 5, and Thompson in 6. In section 7 I discuss some problems that are presented by the data.

4. LILLOOET

A number of Lillooet roots CVC can appear in the shape CVʔC ('interior glottalization') or CVC-p (addition of the suffix -p). Both interior glottalization and the addition of -p generally refer to an incipient change or a change in progress, and the term 'inchoative' or 'ingressive' may be used here. Interior glottalization is applied almost exclusively to roots CAC (A is a ạ i i̱ u ụ). On the other hand, -p is suffixed almost exclusively to roots CəC. Examples of CVʔC are: maʔkʷ "to get dull (blade)" F (cf. məkʷ-mákʷ "dull (blade)" F), n-tiʔqʷ "water gets muddy" (cf. n-təqʷ-tíqʷ "water is muddy, dirty"), nuʔs "to get damp" (cf. nəs-nús "damp"), laʔkʷ "to get loose, untied" (cf. ləkʷ-lákʷ "loose, untied"), n-liʔx̌ "water gets clear" (n-ləx̌-líx̌ "water is clear"), káʔəẇ to go out farther" (cf. káw-ləx "to move away", the latter with the suffix -ləx "body, oneself"; the insertion of ə and the glottalization of w in káʔəẇ are regular), ɣiʔp "to grow (up)", (cf. ɣíp-iṅ "to raise someone or something"), nuʔqʷ "to get warm (atmosphere, weather)" (cf. nəqʷ-núqʷ "warm (atmosphere, weather)"), ki̱ʔl̓-ús "to get embarrased, hurt" (cf. kí̱l̓-us-əm "to be embarrassed, hurt". With roots Ciʕ or Ciʕʷ, interior glottalization yields the forms CíʔiʕCíʔiʕʷ, e.g. líʔiʕʷ "to fall apart" (cf. líʕʷ-in "to dismantle, transitive (-in)"). Interior glottalization may combine with various types of reduplication and suffixation, as in ḵáʔḵx-aɬ "dried out" (ḵax "dry", -aɬ "completive", and reduplication of ḵ preceding the insertion of ʔ in

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resembles 'ee' of German 'Meer', while [e] resembles 'ee' of German 'See'.

terms of rule-ordering). There is also a totally unproductive type of interior glottalization where ʔ is inserted before the root vowel (CVC → CʔVC). We do not consider this latter type here, since it does not serve any clear function.

Examples of the use of -p are: nəqʷ-p "to get warm (atmosphere, weather)" (cf. nəqʷ "warm (weather)"), pəl̓-p "to get lost" (from the root pəl̓- "to be lost"), nə́m̓-ənm̓-əp "to go blind" (cf. s-nə́m̓-nəm̓ "blind", with the stative prefix -s; the shifts in the position of unstressed ə result from deletion and insertion and are regular; both nə́m̓-ənm̓-əp and s-nə́m̓-nəm̓ show total reduplication of the root nəm̓-), kʷəm-p "to get dull (blade)" M (cf. kʷə́m-kʷəm "dull (blade)"). Note that nəqʷ-p and kʷəm-p are parallelled by nuʔqʷ and maʔkʷ respectively (see p. 12), with roots CAC selecting ʔ, and roots CəC selecting -p. Here also belong the cases mə́t-əmt-əp "paralyzed" and má?əmʔat *id.*, from the roots mət- and mat- "paralyzed", with both roots showing total reduplication.

We have a few cases of CəʔC, viz. pəʔq "red-hot" (cf? pəq "white"), x̌əʔs "tired, aching" (no simplex), pə́ʔəc̓ "faded" (cf. pəc̓-p *id.*)

The inchoative function of -p or ʔ is not always completely clear (at least not from a non-Lillooet point of view): see mə́t-əmt-əp and mə́ʔəmʔat and the cases CəʔC above, and note also c̓ʷəl-p "to burn" (cf. c̓ʷə́l-ən "to light it, set fire to it, transitive (-ən)"), qəm-p "warm, hot" (cf. qə́m-ən "to heat it, transitive (-ən)"). It is possible that in these cases -p and ʔ have lost part of their inchoative function, or that the inchoative function was lost in the translations. (For a further discussion of the semantics of -p and ʔ see also section 7).

As a rule, roots CAC retain the stress when followed by a suffix containing A, while roots CəC shift the stress to such a suffix. For example, from x̌íq "to arrive" we form x̌íq-kan "I (-kan) arrive", while from məq̓ "to be full from eating" we form məq̓-kán "I am full". However, stems CAʔC behave like roots CəC with regard to the stress, as in c̓ax- (root) "shy, ashamed, embarassed" → c̓áx-aṅ "to poke fun at someone, transitive (-aṅ)" vs. c̓aʔx-ús "ashamed, shy" (c̓aʔx *id.*, -us "face"). Note also the pair kɨ̓ɬ̓-ús/ kíɬ̓-us-əm on p. 12. Interestingly, both interior glottalization and the suffixation of -p yield forms CVCC (e.g., maʔkʷ, kʷəmp). Forms like ká?əẇ or líʔic̓ʷ (p. 12) are also to be considered CVCC, since the presence of ə and unstressed i is automatic in these forms.

5. SHUSWAP

Interior glottalization in Shuswap inserts ʔ before the vowel of roots CVC (hence CVC → CʔVC). Kuipers 1974: 40-41 gives some 45 examples, all with roots CAC (A is e a i u o). As for the meaning of forms with interior glottalization, Kuipers notes: "Many refer to a state, e.g. pʔeɣ *cooled off* besides peɣ-n-s *he cools it off*; for others, the meaning was recorded as the process itself, e.g. cʔic̓ʷ *to bleed*". Some more examples are: mʔekʷ "blunt, dull" (cf. mkʷ-mekʷ *id.*), cʔol "stretched (as sweater after washing)" (cf. col-n-s "he stretches it"), c̓ʔal "to hurt, smart, throb" (cf. c̓al-t "bitter, sour, salty"), lʔeṗ "bent over" (cf. leṗ-n-s "he bends it down"), q̓ʷʔex̌ʷ "thin, skinny" (cf. q̓ʷex̌ʷ-t *id.*).

The Lillooet suffix -p is parallelled in Shuswap by a suffix -ep which has the form -up after roots ending in a rounded consonant. Kuipers (1974: 61, section 17.3.1B) translates this suffix as "arrive(d) into a state". A few examples: pl-ep "get lost",

cʕ-ep "get torn", tx"-up "provided with a ration" (for more examples see Kuipers). Interior glottalization and -Vp are in complementary distribution (at least in the data supplied by Kuipers in the quoted sections) in that interior glottalization is found only with roots CAC, and -Vp with roots CC-. Not all roots which select -Vp are always unstressed. For example, besides pl-ep we have pil-n-s "he loses it", and besides cʕ-ep we have ciʕ-n-s "he tears it". On the other hand, the root of tx"-up occurs unstressed only, as in tx"-nt-es "he adds to it". Shuswap pl-ep/pil-n-s, cʕ-ep/ ciʕ-n-s and tx"-up/tx"-nt-es are parallelled by Lillooet pəl̓-p "to get lost", cáʕ-ən "to tear it, transitive", and táx"ən "to add, to pitch in, transitive". (As is said on p. 12, Lillooet allows ə under the stress, but Shuswap does not. It seems that Lillooet has preserved the original Salish state of affairs, see also section 7.) Note that Shuswap forms with interior glottalization are CCVC (e.g., cʔiʕ", plep).

6. THOMPSON

Thompson has the following two devices for indicating inchoativity: (1) insertion of ʔ before the vowel of so-called strong roots (basically roots CAC, with A symbolizing e a i i̓ u o), (2) suffixation of -ép to weak roots, i.e. roots with ə. Thompson and Thompson (1980: 201-202) remark that these operations convey "notions of developing action or changing state", and treat ʔ and -ép as "unrelated allomorphs conditioned by the valence of the root" (*op. cit.*, p. 201; the term 'valence' refers to the 'strong' or 'weak' status of roots). A few examples: zʔuc̓ "it gets tight" (from the root zuc̓- "tight"), cʔek "it gets cool" (cek- "cool"), sk-ép "to get hit (by falling branch)", (sək- "to club"), kɬ-ép "it comes apart" (kəɬ- "to take apart"). As is the case in Shuswap, forms with interior glottalization and those with the p-suffix have the shape CCVC. Both types of forms are weak with regard to the stress. ("It is a curious fact that both allomorphs create weak stems - even the infix for strong roots is weak": Thompson and Thompson 1980: 203.) Where the stress shifts from such stems to a suffix, the forms CCVC generally become CVCC, as in sək-p-s-t-és "she manages to club it", zuʔc̓-s-t-és "he (unintentionally) makes it tighter".

7. CONCLUSIONS AND PROBLEMS

Interior glottalization and p-suffixation present at least two problems: (1) the shape of the common operation that underlies both ʔ and -(V)p (if there is such a common underlying shape), plus the attending problem of rule-ordering, (2) the semantics of the case: Lillooet and Thompson interior glottalization and p-suffixation translate as inchoatives, but in Shuswap they translate as statives or continuatives: do we have different semantic functions here, or do the apparent differences go back to translation ambiguities? To start with the last point: it is possible that Shuswap has reanalyzed the function of interior glottalization and p-suffixation. However, the Shuswap examples do not refer to a solid state but rather to a state resulting from a more or less recent change, or to a state in flux. The Shuswap cases therefore do have a moment of inchoativity. A contrastive and comparative analysis of the function of Lillooet, Shuswap and Thompson interior glottalization and p-suffixation would certainly shed more light on this matter.

As for the first point, there is the problem that the inserted glottal stop and the suffix -(V)p have no formal mutual resemblance whatsoever. The most reasonable solution to this problem seems to be one which presupposes a proto-morpheme that at

one stage had both ʔ and -(V)p and continued ʔ in one type of root, and -(V)p in the remaining type of root. My hypothesis is that -p was originally applied to all roots (so that from Lillooet mak"- "dull" the form *mak"-p was derived), that then ʔ was applied to all roots with A, in order to give them the same stress-status as roots with ə (so that *mak"-p became *maʔk"-p), and that finally forms with ʔ dropped -p since it was felt that ʔ, rather than -p, carried the inchoative notion, giving us maʔk".[4] This solution does not account for the fact that in Lillooet we have forms CVCC, while in Shuswap and Thompson we have CCVC. It seems that Lillooet retained the original forms and that at some point in time Shuswap and Thompson applied metathesis to forms CVCC, yielding CCVC. (However, from a synchronic point of view, Shuswap and Thompson are more conveniently described as inserting ʔ before V immediately (without a preceding stage CVʔC), and as affixing -Vp, rather than applying metathesis to CVCp.) Assuming metathesis, on the other hand, gives us a simpler diachronic picture. Also, metathesis is suggested by the following set of cases in Lillooet: stems CəCC and Cə̓CC become CCəC and CCə̓C when embedded in the combination ka-..$_{V}$a "suddenly, unexpectedly, after much trying (but with a sudden and unexpected result)", as in x̌əlq̓ "to roll down" → ka-x̌lə́q̓$_{V}$a "it rolled down (suddenly)", ɬə̓mk "broken, not usable any more" → ka-ɬmə́k̓$_{V}$a "to break (like an old rope when pulled), to come loose (rotting hide of dead animal)". Thus, in Lillooet we do not only have metathesis, but the direction of this metathesis is CVCC → CCVC, and not vice versa. It is quite possible that this was also the pattern in Shuswap and Thompson. (As we have seen in section 6, Thompson forms CCVC become CVCC when unstressed, but this seems to be due to a rather general Salish tendency to avoid initial consonant clusters that do not border immediately on stressed vowels, cf. Lillooet x̌"m-áka? "to do something fast" vs. x̌"əm-ən-cút "to hurry" (x̌"əm "fast", -aka? "hand", -ən transitivizer, -cút reflexive suffix).)

Combining the origin of ʔ and -(V)p with the application of metathesis, we arrive at the schema in Figure 1 (solid lines indicate changes in forms, dotted lines indicate the continuation of an existing form).

The fact that Shuswap CCep and CCup result from CCəp can be proven in the following way: as we have seen on p. 12, Shuswap does not tolerate ə under the stress, while Lillooet and Thompson do. Comparative Salish evidence shows that it is Shuswap that innovated here, and that it continued stressed occurences of ə as cardinal (full) vowels, with the phonetic values that approach the phonetics of ə as conditioned by adjoining consonants: Kuipers (1974: 26) describes the phonetics of ə as follows: "The unstressed vowel ə varies from [ĕ, ă̆, ʌ̆], in the neighbourhood of rounded consonants also [ŏ], to [ə, ŭ] or zero." Obviously, -ep continues the [ĕ] variant, while -up continues the [ŏ] variant.

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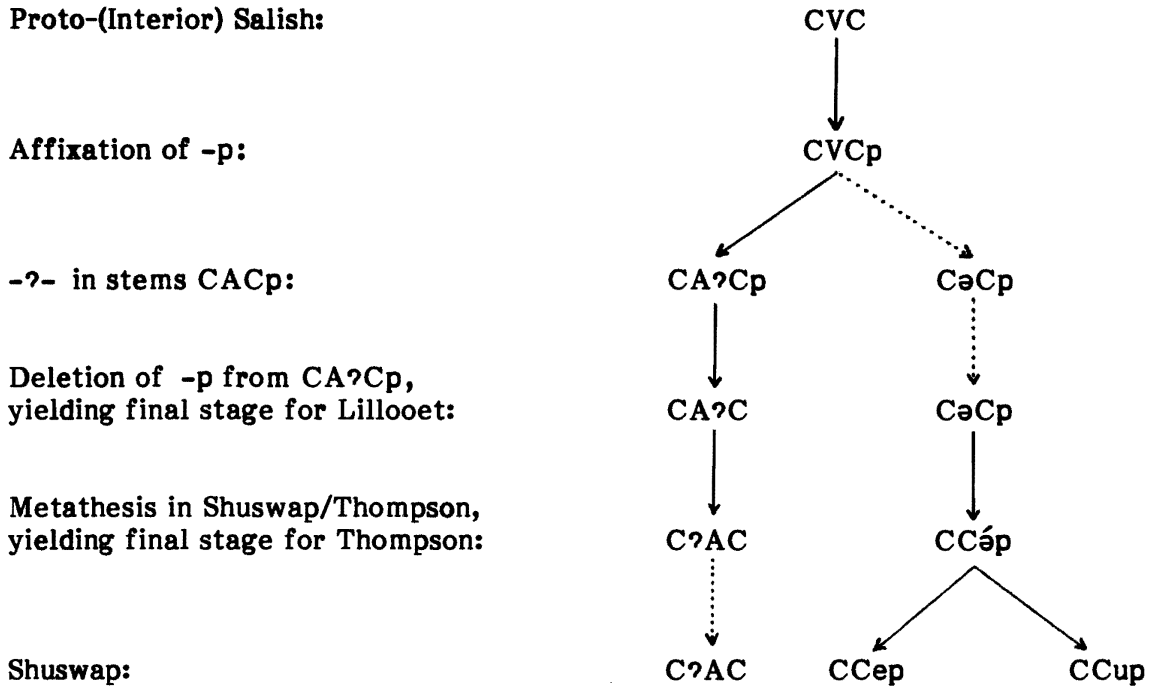
[4] This development would parallel developments in Germanic languages where a certain ending is attached to a root, then requires umlaut in that root, and is finally dropped, as in Old High German scōni → Middle High German schœne → Modern German schön, see Bynon (1983: 26). We could also think of Old English *fot-i → fet, see Sapir (1949: 172-180). Of course, in the Germanic cases there is a phonetic relationship between the ending and the umlaut, a relationship that is lacking between -p and ʔ in the Salish case.

Figure 1.



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A METHOD FOR MEASURING CONVERSATIONAL COHERENCE

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1. INTRODUCTION

The phenomenon of coherence is of much interest to linguists, psychologists, text analysts, and communication scholars. Indeed there are many theories about the cognitive and social factors involved in the production and comprehension of a coherent conversation or text (McLaughlin 1984). However, as Hobbs (1979) noted, these theories often amount to nothing more than taxonomies which have no empirical basis. In part, the paucity of experimental validation stems from a lack of valid and reliable measure of coherence. In this paper, current measures of coherence are reviewed, and the reliability and validity of a new measure of coherence is assessed.

2. PREVIOUS MEASURES OF CONVERSATIONAL COHERENCE

Generally, four methods have been used in the assessment of conversational coherence: (1) judgement by fiat; (2) restructuring of conversations (Ellis, Hamilton and Aho 1983); (3) judgement of appropriateness (Phanlap and Tracy 1980); and (4) scaling of equivocation (Bavelas and Smith 1982).

Most scholars use the "judgement by fiat" technique to assess coherence (Hobbs 1979). Typically, these scholars analyze a conversation in terms of a taxonomy of coherence relations that they propose. Usually, the rules for making decisions about the types of coherence are included in the analysis, and the types of coherence relations are based on the semantic content of the statements (e.g. Riechman 1978, Shank 1977). None of these scholars, however, have attempted to establish the reliability of their methods of assessment. Therefore, while this technique may be a valid measure of coherence (as defined by the particular theory of coherence), its reliability has yet to be established. In addition, the "judgement by fiat" method of measuring conversational coherence has an objectivity problem; that is, the people who classify conversations are the very scholars who are presenting the theory of coherence.

In testing the validity of Reichman's (1978) model of conversational coherence, Phanlap and Tracy (1980) asked subjects to judge whether the second statement of a pair was an appropriate response to the first statement. If we consider coherence to be the semantic relation between a pair of sentences (McLaughlin 1984), it is important to note

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that this procedure does not operationalize the most common view of coherence. Subjects were asked to judge the appropriateness of a response and not the semantic relations between two statements. Because there is no empirical evidence linking coherence with the judgements of appropriateness, it is difficult to judge whether the measurement technique actually assesses coherence. The coherence measure used by Ellis, Hamilton and Aho (1983) has a similar limitation. Ellis *et al.* (1983) transcribed a conversation, printed the statements on cards, randomly ordered the cards, and asked subjects to sort the cards in the order the conversation occurred. Since the subjects were not instructed to base their judgements on the coherence between the statements, it is difficult to judge what criteria the subjects used in sorting the cards. Therefore, while the procedure of Ellis *et al.* (1983) is a valid measure of how subjects think conversations should be structured, there is no evidence that the subjects' sorting of the conversation reflects the coherence between the statements.

Finally, Bavelas and Smith (1982) have developed a reliable and valid measure of equivocation that, in part, measures the degree of conversational coherence occurring between questions and answers. As described in Bavelas and Smith (1982) students are trained over a series of scaling sessions to rate the extent to which a speaker's utterance: (1) is clear; (2) addresses the other person in the situation; (3) contains the speaker's opinion; and (4) is a direct answer to the question. The final dimension (extent to which a message is a direct answer to the question) can be seen as a valid measure of the degree of coherence occurring between questions and answers. Moreover, as reported in subsequent articles (Bavelas 1985, Bavelas and Chovil 1985) the procedure has proven to be a reliable measure for distinguishing between coherent and incoherent messages. Unfortunately, the equivocation measurement technique is unsuitable for the general measurement of coherence, because the last dimension can only assess coherence between questions and answers.

In summary, current measures of conversational coherence are limited. Phanlap and Tracy's (1980) and Ellis, Hamilton and Aho's (1983) measures of coherence are questionable, because properties other than the semantic relations between statements are assessed. The judgement by fiat technique of coherence has no demonstrated reliability, and Bavelas and Smith's (1982) equivocation measure can only assess the coherence between questions and answers.

3. A METHOD FOR MEASURING THE DEGREE OF COHERENCE

3.1 Overview

Naive judges rated the degree of semantic similarity between a pair of statements on a "coherence" continuum using a magnitude estimation procedure similar to that of Bavelas and Smith (1982). This procedure avoids the limitations of other measures of coherence. First, the lay judges are not aware of the theory in question. Second, the degree of semantic similarity of two statements is assessed; therefore, the measurement technique operationalizes a more common definition of coherence. Finally, the measurement procedure assesses the coherence between all types of statements.

3.2 Stimuli and the Coherence Continuum

The judges rated the semantic similarity between 55 pairs of videotaped statements. The statements were obtained from a short excerpt of an interview between Barbara Frum and John Turner that occurred during the Liberal Party of Canada leadership campaign (see Table 1). The pool of 55 statements was formed by combining the eleven

statements into all possible nonredundant pairs. The pairs of statements were edited into a stimulus tape where each pair of statements was preceded by an identifying number. (Copies of the edited videotape are available from the author.)

Judges rated the stimuli on a piece of masking tape placed across the length of a desk (120 cm). Four labels were placed underneath the masking tape in order to convey the continuous nature of the coherence continuum: at the extreme left, the label read, "This area is for messages that are very connected. Messages like this are about the same things."; at the extreme right the label read "This area is for messages that are disconnected. Messages like this do not have a general topic in common." At 40 and 80 cm were labels that read "This area is for messages that are quite connected. Messages like this are related in that they are talking about very similar things." and "This area is for messages that are quite disconnected. Messages like this may share a general topic, but are only indirectly related." Thus, judges rated the degree of semantic similarity between statements on a physical scale of magnitude. Statements with high semantic similarity were rated at the far left-hand side of the continuum, while statements with no semantic similarity were rated at the far right-hand side of the continuum.

3.3 Judges

Four University of Victoria undergraduate students participated in the study. Each judge was paid five dollars.

3.4 Instructions and Procedure

Judges met with the experimenter separately. At the outset the judges were told that the investigator was interested in the "connectedness of utterances" and that their job was to rate the "relatedness between some messages". The experimenter then described the continuum and played examples of two very related messages, two related messages, two messages that were indirectly related, and two messages that were not at all related (see Table 1 for transcription of the examples). After the experimenter presented the videotaped examples and stressed that the ratings should reflect literal interpretations of the messages, he described the messages that would be rated and instructed the subjects to make a pencil mark on the tape for each rating.

The experimenter then played the stimulus videotape for each judge who rated the pair of statements, identified it by number, and then proceeded to the next pair of statements. If the judge had trouble hearing the statements or had difficulty making a judgement, the experimenter replayed the pair of statements. At all times the judges were encouraged to talk about their ratings, so that the experimenter would know what criteria the judgements were based on.

3.5 Results

In order to estimate the reliability of the judges' ratings of the 55 pairs of statements, an intraclass correlation (Ebel 1951) was calculated. The intraclass reliability of the students ratings was high ($r = 0.88$). Parenthetically, the judges did not find the scaling task to be difficult, and made very similar comments about the coherence of the pairs of messages.

One might dismiss the high reliability, because of the small N (4) used in the study. Actually, the use of a small N provides a more severe test of reliability, because one idiosyncratic judgement results in proportionally greater error variance within a small N set of judges than the same idiosyncratic judgement within a large N set of judges. Thus,

Table 1. Examples and Stimulus Statements.

Examples

1 (very connected). a) The agency did not tell us the extent of their involvement. b) They did not tell us the extent of the President's involvement.

2 (very unconnected). a) The agency did not tell us the extent of their involvement. b) I have not endorsed Senator Hart for several reasons -- the most important of which is I'm not sure of where Gary Hart is going either.

3 (quite connected). a) The agency did not tell us the extent of their involvement. b) What we were in fact briefed about, about two months after the fact, was that in a compodium of a number of things that were occurring in at number 17 was by the way there are mines there.

4 (quite disconnected). a) The agency did not tell us the extent of their involvement. b) Isn't it a fact that you're opposed to the contras being financed by U.S. funds in order to overthrow the Sandinista regime?

Stimulus Statements

1. Are you embarrassed by the revelations that reflect ill of your financial competence?
2. I've been in the .. I've been in the free market.
3. And you win some Barbara and you lose some.
4. If I hadn't won some I wouldn't have been able to stand for the office that I am standing for.
5. You are asking for confidence to manage the whole economy, not just one small business.
6. I didn't ahh manage the business' personally.
7. I was not the chief executive officer.
8. I chaired a board.
9. and ahhh on the small business side ahh small business has been savaged throughout 1981, 1982 1983.
10. And we were on the venture capital field.
11. Under Ontario Legislation that that subsidized it because it was last resort risk financing.

the use of more judges will only increase the reliability of a measure (Nunnally 1967).

4. EXAMINATION OF THE RATINGS

The final step of the measurement procedure was to average the judges' ratings for each pair of statements. This average score reflects the degree of coherence between two statements: a low score indicates a high degree of coherence between two statements, while a high value indicates incoherence between two statements.

Examination of the scores reveals that the judges' ratings are both sensitive and subtle. For example, the judges rated the semantic similarity between message three and four as high, while statements two and three were judged as only tenuously related. Moreover, the scores that resulted from the students ratings reflect more subtle differences in coherence. For example, statements six and seven specifically relate to John Turner's activities within a single organization, while statement eight concerns what activities John Turner did *not* perform within the same business. Here judges rated the coherence between statements six and seven as slightly greater than the coherence relation between statements seven and eight.

5. DISCUSSION AND USE OF THE COHERENCE SCORES

The goal of this research was to develop a reliable measure of conversational coherence. The results described here are consistent with this goal. Lay judges with little training rated the semantic similarity between messages with a high degree of reliability. Still the obvious question remains, "Is the measure valid?" Because the best evidence of construct validity results from use of the measure (Cronbach and Meehl, 1955), the author's current research is relevant.

The measurement technique has been used to test a homeostatic conception of conversational coherence. Briefly, a homeostatic conception of coherence posits that statements are organized so that the global coherence of a conversation is maximized, and that global incoherence is minimized. Such a conception of coherence does not require statements to be organized at a local level in a Grician (1975) fashion (that is, "be relevant"). On the contrary, a homeostatic conception of coherence predicts that statements that follow one another will not always be relevant to one another, and that this lack of relevance is inextricably involved in maintaining the coherence of a conversation as a whole. Thus, a homeostatic conception of coherence would predict that the order in which the statements within a conversation occurred would be one of the most coherent possible orderings of the statements.

In order to test the homeostatic conception of coherence a computer program which simulated the different possible orderings of a conversation was written. Briefly, the program determines the global coherence of each possible ordering of the statements within a conversation, compares the total coherence of each possible ordering of the statements to the total coherence of the ordering of the statements that occurred, and then records the number of possible orderings that are more coherent than the ordering of the statements that occurred. When the coherence ratings of the Frum-Turner interview were entered into the program, the results strongly confirmed the homeostatic conception of coherence. Of the 3,628,800 possible combinations of the 11 statements, 18,303 (.5%) were more coherent than the order of the eleven statements that occurred.

Therefore, 99.5% of the possible orderings of the statements in the Frum-Turner interview were less coherent than the order of the statements that occurred.

To return to the question of validity, the research concerning the homeostatic conception of coherence provides partial confirmation that the measurement technique is valid. Indeed, because the hypothesis makes an extreme prediction about the coherence of the total conversation and requires that the measure have little measurement error, the results of the simulation program provide strong evidence for the validity of the measure.

Obviously, the validity of a measure is determined over a series of investigations; hopefully, readers of this paper will employ this measurement technique to examine other aspects of conversational coherence. For example, if the coherence between all the statements within a conversation is measured it is possible to depict a conversation topographically. With such a "map" of conversation it would be possible to depict the clusterings of statements about a single topic or note where a conversational change occurred. Or, the coherence within a conversation could be depicted graphically. From these graphs it is possible to examine both equivocation and repair sequences (Vuchinich 1977), since one speech act involves a departure from coherence and the other involves a return to coherence. Other possible modifications would involve the stimuli presented to judges: the measurement technique could be applied to written or tape recorded messages, or the unit of analysis could be changed to a pair of speaker turns or a pair of paragraphs.

However, the measurement technique presented here is not without limitation. The scalings reflect a literal interpretation of the statements; that is, the judges were instructed not to infer what the speaker of the statement "meant". Thus, the ratings in no way reflect the speakers' perceptions of the conversational coherence. Such a limitation is important when conversants resort to the use of the conversational implicature. Here a listener would consider a response to be coherent; yet the present procedure would consider the response to be incoherent. Since the goal of this research was to develop a reliable measure of the coherence between statements, limitation of the judges' inferences was unavoidable. However, to researchers who want to assess what the phenomenological aspects of coherence are, the measure of coherence presented in this paper is not of use, and may not be adaptable for their purposes.

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LITERARY LANGUAGE DEATH AND LITERARY LANGUAGE REVIVAL: A CASE STUDY OF CZECH

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1. INTRODUCTION

The objective of this study is to determine the factors operating in the decline and revival of literary languages in general, and of the Czech literary language in particular. The aim is to examine the ways in which literary and spoken languages influence each other. In other words, how does the literary language give a speech community an identity that enables it to resist assimilation, and how do the speakers respond to attempts to suppress their literary language? We thus analyze language primarily in the context of nation building, in order to show how the growth of a literary norm is an integral part of this process.

2. LANGUAGE DEATH AND LITERARY LANGUAGE DEATH

The death of a spoken language is a phenomenon separate from, but not altogether unconnected with, the death of a literary language. Literary languages, such as Latin, were in common use long after the spoken languages (vernaculars) had changed structurally and morphologically.[1] These changes were so far-reaching that it was no longer possible to view the emerging spoken languages as dialects of the same language. It is possible, furthermore, for spoken languages to exist without a literary form. But a spoken language will undergo decay most frequently in situations of bilingualism where it occupies a definite socially subordinate position and it does not possess an active literary form (Dressler 1982: 324).

Linguistic subordination of one speech community to another is, therefore, a key factor in most situations of linguistic decay. Such a situation may lead the speakers of the subordinate speech community to evaluate their own language less favourably than the dominant language. As a result, the speakers of the subordinate language restrict its

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[1] In recent years scholars of various persuasions have turned their attention to dying languages within several subdisciplines of linguistics and anthropology. In particular they have examined what decaying languages may reveal about simplification processes, whether phonological (Dressler 1972), morphophonological (Dorian 1977), morphological (Dorian 1978; Dressler and Wodak-Leodolter 1977), or syntactic (Hill 1973; Dorian 1973). Because of the reductive aspects of language death, comparisons with pidginization (Trudgill 1976-77; Dorian 1978) and with language acquisition (Voegelin and Voegelin 1977) have appeared. Sociolinguists have developed an interest in what Fishman (1964) called "language maintenance and language shift", and language shift is often the cause of language decay. See Dorian 1981: 3-4.

use for reasons that may include their accepting the attitudes of the dominant social group and wishing to assimilate to them linguistically after they have already undergone bilingual primary socialization. The subordinate language is thus reduced to 'folklore'. Central governments usually play an important part in this process, encouraging the speakers of the subordinate language to accept the dominant language and reject the subordinate one.

Invariably these responses to the subordination of one language to another result in reducing the number of speech situations where the individual will find himself using the subordinate language, frequently restricting its use to immediate family relations. These types of communications often involve a minimal vocabulary and a very simple structure. This normally results in the subordinate language losing its former lexical and morphological complexity.

This in turn has a negative feedback on the speakers of the subordinate language, causing them to make negative sociopsychological evaluations of their language. The subordinate language thus even further loses its ability to function as a vehicle of prestige. Many of the speakers of the subordinate language, therefore, also find it increasingly difficult to continue using the language as a source of identity.

3. LITERARY LANGUAGE

The appearance of a generally used literary form of the subordinate language can, however, reverse the process of language decay. The planners of a literary language can enrich the linguistic structure of the subordinate language by creating stylistic options comparable to those of the dominant language. This gives the subordinate language more of the appearance of a language of educated people, thereby increasing its prestige function. As the subordinate language becomes more prestigious, it becomes increasingly possible for an individual to identify with it.

At this point we have a situation of widening linguistic horizons for the subordinate language. In most cases this results in the creation of a new linguistic elite speaking the subordinate language that comes into conflict with the old linguistic elite speaking the dominant language. Often, there is also conflict with the central government, where the linguistic revival comes into conflict with its centralizing policies.

The limitation of this study is the fact that it deals with a historical period during which there were no synchronic studies conducted in linguistics (synchronic linguistics only gained popularity in the twentieth century). Therefore, there were no studies done on spoken Czech during the late eighteenth century, when the language underwent the greatest decay. Nevertheless, we can make limited synchronic conclusions based on certain observations from persons living at the time. (These observations will be dealt with in more detail in section 4). In addition, the definition of literary language death is limited to 'lack of literary activity', and will therefore not provide any detailed description of the stages of literary language death.

4. THE HISTORY OF LITERARY CZECH: OVERVIEW

One of the central themes for a person studying the history of the kingdom of Bohemia has been the conflict between speakers of German and speakers of Czech. This

conflict has often been presented as a continuous ethnic or racial discord that began in the ninth century with the first surges of the German *Drang nach Osten* and did not end until the entire German-speaking population was forced to leave Bohemia at the end of World War II. If one were, however, to analyze what social groups were the primary bearers of German culture at different periods, the situation becomes more complicated. I believe that one is, in fact, not looking at a single conflict, but rather at many different conflicts wherein diverse social groups have identified themselves for various reasons with either the German or the Czech language. Thus one finds that at times the bearers of the German language are the nobility, at other times the townsfolk (*měšťané* 'burghers'), at still other times the Jews, and more recently the Nazis. In fact, we are not dealing with the clash of two separate nationalities, but with a linguistic problem. In this study I intend to examine the role that language has played in Bohemian society.

4.1 Bohemia and the Czechs

The Czechs first migrated into Bohemia from the Vistula river basin northeast of the Carpathian mountains at the time of the fall of the Roman Empire. At that time the region had been evacuated by its prior inhabitants, probably a Germanic people. At any rate, there does not appear to have been a forceful occupation of the territory. The Czechs, having installed themselves in their new homeland, called it *Čechy*, after the name of the *Čechové* lands near the junction of the *Vltava* [Moldau] and the *Labe* [Elbe] rivers. To outsiders, however, the land was still known by one or another variant form of Latin *Boiohemum*, which later appeared in German as *Böhmen*. This in turn referred to the *Boii*, a Celtic tribe that had once inhabited the region (Hermann 1975: 7). The conflict between German tribes and the Czechs did not begin until the year 800 approximately, when the last of the pagan Germanic tribes, the Lombards, were converted to Christianity by Charlemagne. As a result of this new religious justification, the course of the barbarian invasions was reversed (Halphen 1926: 109-112, see also Nicholas 1973: 45-48). What had been a westward push became what modern German historians describe as the *Drang nach Osten*, the drive to the east, the beginning of a prolonged conflict between ethnic Germans and Slavs. The Bavarians, supported by Charlemagne, drove the Slavs out of the Danube valley as far as Vienna, while the Saxons occupied much territory adjacent to the Elbe river, conquering and subjugating many Slavs in the process. But the Czechs, protected by Bohemia's natural border of mountains, held their ground (Wanklyn 1954: 146-48). In fact, this phase of the *Drang nach Osten* ended with the failure of the Germanic tribes to conquer Bohemia. In future centuries, Czechs and Germans would live for long periods at peace, sharing many cultural features, but each retaining their own language.

4.2 The Appearance of a Literary Language

The growth of towns during the Middle Ages resulted in the growth of new social classes, and created a need for a more educated population. The urban revolution in Europe north of the Alps began in an area roughly known as Flanders, which included much of northwestern France. One of the first literary vernaculars was, therefore, the so-called *langue d'oïl*, of which the French language was one of many dialects. As the urban revolution spread eastward, the *theudisce* or German language joined the ranks of the literary vernaculars (Wolff 1971: 134). By the thirteenth century, the literary German language began to be used also in Bohemia (Havránek et al 1957: 6). This was in part due to the fact that the urban revolution had arrived there, as well as the presence of large numbers of German immigrants. German written literature had, furthermore, found many sponsors among the nobility. But by the mid-thirteenth century, a xenophobic reaction had set in among the Czechs (Havránek 1957: 12). By this time, the urban revolution was well established in Bohemia, and it had begun affecting the local

population. As a result, the Czechs began developing a literary tradition of their own.

The adaptation of the Latin alphabet to a Slavic language, however, demanded an understanding of its phonology. Cosmas attempted to render Slavic place names with combinations of Latin letters that even confounded experts. By the thirteenth century a system was being developed that used groups of two Latin letters to represent phonemes that did not exist in Latin. This system is known as *digraphic*, or composite, e.g., the combination *ss* would represent *š*, *cz* = *č*, *zz* = *ž*, *rz* = *ř*. Czech was the first Slavic language to attain a written form using the Latin alphabet, using orthographic principles that it would later abandon; they would nevertheless be preserved in other Slavic languages that it influenced, most notably are the combinations <cz> and <rz>, which are still used in Polish (Mann 1957a: 152).

It was also during this period that another theme of Bohemian history would become apparent: the tendency for different social groups to rally around language as a symbol of group identity. In this case, as it would also be later, the languages involved were Czech and German. The speakers of Czech and the speakers of German occupied different social strata. In fact, I believe that these two languages are the one constant factor in Bohemian history. I do not, however, believe that the existence of these two languages necessarily entails the existence of two nationalities. Instead, we find that at different points in history, different people chose to identify themselves for diverse reasons as either Czechs or Germans. Thus, what appears to be a centuries-old conflict is, in fact, a series of dissimilar conflicts, in which both sides state their position in terms of language.

Czech speakers owe the origin of their identities to the reign of the Holy Roman Emperor, Charles IV (1342-1378), who was also King of Bohemia. As Prague became a capital city, the population mushroomed. This was the 'Golden Age' of Czech history. The University of Prague (*Karolinum*) was founded in 1348, attracting students from as far away as England. The university was divided into Czech, Polish, Saxon and Bavarian faculties, each one having a controlling vote (Betts 1969: 1-28). This was also the period when the medieval Czech language attained its highest prestige. The *Chronicle of Dalimil*, which was essentially a Czech version of the Cosmas chronicle, recounts the origin of the Czech people (Daňhelka et al. 1958). Other outstanding examples of the literature from this period are the *Alexandreis* and the *Legend of St. Catherine* (for further details, see Cejnar 1964).

4.3 The Hussitic Literary Language

All was not well, however, in Bohemia under the reign of Charles IV. He tended to prefer to have German speakers in all important royal positions. This became more evident during the reigns of Charles' successors. One of the critics of the policy of favouring Germans was Jan Hus, a professor of theology in the Czech section of Prague University, who preached in Czech at the Bethlehem Chapel (Held and Hus 1979: 57-73). When Hus was burned at the stake at Constance, after being promised safe conduct, violence replaced theological arguments. The violence, furthermore, quickly took on an anti-German character, as Czech mobs began attacking German towns in Bohemia and murdering German priests (Nyrop 1981: 12).

Jan Hus, however, was more than just a religious reformer; he also tried to turn the vernacular of Prague into a vehicle of the ministry. To this end, he produced the first treatise on Czech orthography, called *De orthographia bohemica*, in which he introduced the modern 'phonetic' or 'diacritic' spelling, which uses one letter per sound. He used dots (as consonant modifiers) written over letters representing sounds not existing in

Latin; for example *ṡ* (= *š*), *ż* (= *ž*) *ċ* (= *č*), and *ṙ* (= *ř*). He also introduced the acute accent (*čárka*) to distinguish long and short vowels. In addition, he tried to purge the spoken language of Prague of German loanwords and to eliminate archaic forms. Jan Hus, however, would remain until the nineteenth century only one of several influences on the Czech language. Digraphs continued to be used along with diacritics. By the fifteenth century, furthermore, diacritic hooks had virtually replaced the Hussite dots. Many palatal fricatives, however, continued to be represented by the pre-Hussitic digraphs in combination with the diacritic hooks --as in <čz> (Mann 1957a: 152-153).

The real standardization of the classical literary Czech was not the work of Jan Hus, but was due to the Reformation, and the translation of the Bible into Czech. This was done at the end of the sixteenth century, by the Protestant sect known as the Moravian Brethren, *Jednota bratrská*. This version of the Bible was to form the basis for a version of literary Czech, known as *bibličtina*. The *Kralice Bible*, as it was called, thus had an effect on the Czech language, as had the Lutheran Bible on German. But unlike literary German, classical literary Czech was not destined to survive (Čiževskij 1971: 71).

The *Kralice Bible* also reflected a number of changes that had occurred in the spoken Czech language by the sixteenth century. The aorist and the imperfect forms of verbs had disappeared. Their function was taken over by the old perfect tense. At this point aspect became an important feature replacing tense. Thus, the function of the former aorist *vedech* 'I brought' would be expressed instead by *Já jsem vedl*, whereas the function of the former imperfect *vediech* was taken over by *Já jsem vodil*. Furthermore, the dual number disappeared from the Czech language with only a few exceptions (mainly when referring to paired parts of the body): *oči*, instrumental plural *očima* 'eyes'; *uši/ušima* 'ears'; *ruce/rukama* 'hands'; *nohy/nohama* 'legs'; *dvě/dvěma* 'two'; *obě/oběma* 'both' (surviving dual forms in modern Czech).

In 1620, the armies of the Czech Diet were defeated by the Hapsburg King, Ferdinand of Styria, at the Battle of White Mountain. The defeat spelled not only the eradication of Protestantism in Bohemia, but also destruction of the entire Czech ruling class. In their place came a foreign nobility originating from every European nationality imaginable, but sharing one trait in common: they used German as a lingua franca (Kerner 1969: 69). But the Germanization of Bohemia did not begin with the Battle of White Mountain. For a century already, the Czech Diet had been electing kings of the Hapsburg dynasty, who were not only Catholic, but also German. The Hapsburgs had in turn protected the German-speaking towns and the Catholic religion. Thus, by the time of the Battle of White Mountain, German speakers were well-established in Bohemia. As a result of the Battle of White Mountain, however, Protestantism was defeated, and in the baggage trains of the Hapsburg armies came Jesuit missionaries. Protestantism survived, however, among Czech refugee communities in Moravia and Slovakia. Here the language of the *Kralice Bible* continued to be a major literary vehicle, despite events in the heartland of the Czech language. It is, therefore, no surprise that the people who would later be instrumental in reviving the Czech language were Protestants from these communities.

4.4 Decay of Literary and Spoken Czech

The circumstances that brought about the decay of the spoken Czech language fit into Dressler's model for language death, starting with social subordination and resulting in linguistic decline. Although the Czech language survived in its many dialectal forms in the rural areas, the former prestige dialect of Prague was undergoing rapid decay by the 1780s. In both the decay and in the revival of the spoken language, the literary language played a key role. From its medieval origins, the literary Czech language was

an important element in the linguistic identity of Czech speakers. The decline of the literary language after 1620 was in turn an important factor in the decline of the spoken language, and the subsequent revival of the literary language at the beginning of the nineteenth century preceded the general revival of the spoken language.

The primary cause of the decline of the Czech literary language after the Battle of White Mountain was outright suppression by the conquering army and the Jesuits who accompanied them. This consisted of massive burnings of books for their supposedly heretical doctrines, which in fact meant any book in the Czech language.[2] It also meant the Latinization of all the Czech institutions of higher learning, reducing Czech to use only in the primary schools.[3]

More fundamental to the future of the Czech literary language, however, was the loss of a native Czech-speaking educated elite, consisting of the classes that "might have been the active bearers of a cultivated linguistic tradition" (Bělič 1953: 193). Some of the members of these classes had fled into exile after the loss of their political autonomy. It has been generally accepted by scholars that the population in Bohemia diminished from about 1,750,000 to about 950,000 (Míka 1976: 535-563; see also Teich 1981: 145). Twenty-five percent of the nobility, twenty-five percent of the bourgeoisie, and most of the Czech intelligentsia (among them *Jednota bratrská* [Moravian Brethren])--approximately 36,000 families--were exiled or emigrated voluntarily (Kerner 1969: 68). Most of the members of the upper class, however, chose to remain in Bohemia, but also to assimilate themselves to the conquerors, which meant, among other things, to favour the German language in all situations.

The implications that this had for the spoken Czech language were profound. Czech became a language spoken mainly by peasants and servants, with the consequent lower sociolinguistic evaluation of spoken Czech. This in turn resulted in the sociolinguistic restriction of the use of spoken Czech, meaning it became an unacceptable language to be used in polite company. Palacký (1865: 40) wrote in his autobiography: "...Kdokoli nosil slušný kabát neodvážil se tak snadno na veřejných místech promluvit česky." [Whoever wore a decent coat did not venture so readily to speak Czech in public place]. (See also Zacek 1970: 17.) Consequently, Czech was spoken in fewer types of speech situations, resulting in impoverishment of structure and vocabulary. Speakers of Czech began to show increasing lack of stylistic options, and started to make extensive use of German lexical borrowings. In the middle of the 19th century there was a Czech-German jargon in use by the lower classes. This jargon was probably also spoken a century earlier.[4]

These factors, in turn, caused Czech to become a language that was inadequate for performing the higher social functions. Czech speakers would find themselves thus forced to switch into German when discussing anything but the most elementary subjects.

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2 The Jesuits, led by Antonín Koniáš, collected and burned many Czech books, including the Czech translation of the Bible (Hermann 1975: 69).

3 Up until 1780 Czech was still used sporadically in schools; however, beginning with 1780 the language was no longer tolerated in the gymnasia and after 1788, in order to gain entrance to these schools, the pupils had to know German (Kerner 1969: 351-52).

4 Alois Jirásek satirized this speech in *Filosofská historie* (*1877*). The following exchange may be cited as a typical example of this jargon: ...'Že by prý pan Vavřena byl hezký a hodný, že, kdyby nebyl tak stolz, so könnte man ihn austehen.' 'O, to je závist a Eifsucht' (Jirásek 1942: 17). See also Auty 1956: 244.

Educated persons were, furthermore, unable to express themselves in any language but German. Even the early Czech nationalists tended to write and speak more German than they did Czech.[5]

One can say, therefore, that the spoken Czech language was most threatened by decline in those places and during those times when Czech speakers were in the most direct contact with German speakers. More specifically, spoken Czech was most threatened during the late eighteenth century, during the period of greatest centralization and government-sanctioned Germanization, and immediately prior to the revival of the literary Czech language. It was most threatened, furthermore, in urban areas, especially Prague, which was the cradle of the literary Czech standard and the 'prestige dialect'.

5. THE CZECH LITERARY REVIVAL

The modern Czech literary language owes its origin to the Czech National Revival during the first part of the nineteenth century. This was itself an outgrowth of the period of Romantic nationalism. The particular concern for language displayed by some of these nationalists reflected the desire on their part to revive a literary language that had historically been used in the territory of Bohemia. The spoken Czech language had, however, evolved considerably since that time, a fact that forced the linguistic revivers to compromise their original objectives and create a literary language which approximated the spoken standard more closely. The compromise was, nevertheless, not complete. To this day, there is a clear bilingualism detectable in Czech between the literary norm and the spoken usage, which was derived from the Central Bohemian dialect.

The Czech National Revival is inextricably intertwined with the revival of the Czech literary language. Although nationalism is a nineteenth-century phenomenon, the roots of modern Czech nationalism can be traced to the late Middle Ages (probably not later than the early fifteenth century). During its long development the expression of nationalism reflected the character of the different historical periods. In the Middle Ages religion was the primary reason for establishing a literary standard for Czech, whereas modern nationalism, especially since the mid-nineteenth century, was of a more secular nature, as political autonomy and the 'romantic' nationalism were of major importance to the promoters of the Czech literary language. The Middle Ages and the nineteenth century had several points in common:

a) the growing resentment of the Czech speakers toward the German speakers (and vice versa);

b) the concern with language, the choice of a common dialect (Central Bohemian), the setting of norms, resolving the problem of orthography and the opposition to German loanwords.

However, the two periods had different societies; the Middle Ages were feudal, whereas the nineteenth century was characterized by industralization.

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[5] Later generations commented: 'Němčina se vybíjela němčinou' [German was used to drive out German] (De Bray 1980: 36).

Czech differed from certain other Slavic languages in that it had a previously established literary language. This was, however, extensively modified during the revival resulting in significant differences in orthography. These reforms bear the marks of the various reformers, in much the same way as was the case of other Slavic languages that had no prior literary forms. The names Dobrovský, Palacký and Šafárik mark the different stages in the evolution of Czech orthography. They are as important to literary Czech, in fact, as Vuk Karadžić is to literary Serbian, Ljudovit Gaj to Croatian, L'udovit Štúr to Slovak, and Franz Miklosich to Slovene.

The revival of literary Czech was, however, much more dramatic and rapid than it was with other Slavic languages during the same period. In the course of the nineteenth century, Czech-language literacy rose from zero to well over ninety percent. This can be attributed to the parallel economic developments brought about by the Industrial Revolution in Prague. The city grew rapidly as Czech-speaking peasants migrated to take urban jobs. Peasants and their children were exposed to primary, secondary and even higher education in the Czech language. They read Czech-language newspapers and attended Czech-language theatre. The people they looked to as their leaders, futhermore, were people who prided themselves in being Czech speakers.

5.1 Bohemia under Hapsburg Control

The Hapsburg control over Bohemia was uncontested after the Battle of White Mountain and remained so until the late eighteenth century. The old Czech nobility had been largely wiped out, and those who remained had been thoroughly domesticated. In their place came a colonizing population of people from different parts of Europe. To the extent that they spoke any language, other than their own mother tongue, they spoke German (Kerner 1969: 69). But the feudal system that had spawned the Czech nobility, and which drove them along the nationalistic course, remained essentially intact. Fiefs were redistributed; they were not, however, dissolved. The majority of Czechs remained subjects of one of the hundreds of miniature states that crowded the Bohemian countryside.[6] They were subject to the lord's judgment, could not leave the manor without his permission, and had to maintain heavy payments to support him; he in turn had to support the king.

By the eighteenth century, the same nationalism that had been one of the hallmarks of the old Bohemian nobility came also to characterize this new nobility. They became marked by their inclination to be disloyal to the crown, and by their tendency to admire what they called the 'Bohemian Constitution' which they considered rightfully theirs. The only difference between the new Bohemian nobility and the old one was that they spoke primarily German, not Czech.

5.2 The Bohemian Nobility and Czech Nationalism

The new Bohemian nobility were, thus, by the eighteenth century definitely not hostile to the Czech language. Certain influential families, in fact, were of old Czech origin. Most significant of these were the Kolovrats, who had in the period since the Battle of White Mountain managed to preserve an enormous library of old Czech manuscripts, including some original writings of Jan Žižka, a disciple of Jan Hus (Mann

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[6] Bohemia had between nine hundred and fifty and a thousand manors. The manor in the eighteenth Century was 'a small constitutional, institutional, administrative, and agrarian state, a little self-sufficient economic world' (Kerner 1969: 274).

1957b: 81).

The crucial events that triggered the revival, however, were the reforms of Maria Theresa and Joseph II during the second half of the eighteenth century. In 1742, Austria suffered a serious military defeat at the hands of Prussia. Bohemia was briefly occupied. The Bohemian nobility, furthermore, showed a remarkable lack of loyalty to the Hapsburg crown. To a man, they swore an oath of fealty to Frederick II of Prussia. But the Prussians did not stay. They withdrew from Bohemia, keeping only most of Silesia and Lusatia. The new empress, Maria Theresa, was crowned in Prague. But she never forgave the disloyalty of her nobility, and during the rest of her reign she undertook reforms that not only strengthened the Austrian state, but attacked the privileges of the nobility. These reforms were pursued even further by her son Joseph II. But after Maria Theresa's death, an aristocratic reaction set in, which stimulated the national revival.

The primary direction of the reforms was to increase the role of the bureacracy in governing the country and, thus, decrease the role of the nobility. In order to facilitate this, the two emperors introduced German as a language of administration. They also organized schools all over the empire to teach German and train future administrators. These schools were open to persons of all social origins. Also, to facilitate the learning of German and administration, the government encouraged the study of national languages (Kočí 1978: 146).

More than any other group, the Czechs took advantage of the opportunities available to them. Czechs enrolled in government schools in large numbers. So successful were these schools that a number of private schools were also founded to compete with them. By the end of the eighteenth century, in fact, it became common to find Czech tutors living in the homes of many wealthy and aristocratic families (Macartney 1969: 213-15). This was the Czech intelligentsia that would later exert an influence far beyond its numbers. It was especially the tutors who served in the households of old Czech origin, who would come to play an important role in the Czech literary revival.

This tremendous receptivity that Czechs had to government popular education programs was a reflection of the wide-spread growth in the levels of education and skill of the Czech population in general, which was in itself one of the early indications of the beginnings of the Czech industrial revolution. Linguistically, however, it threatened more than ever the survival of the literary and spoken Czech language. For the first time, upward mobility was possible, yet in order to achieve it, one had to become Germanized. As Czechs rose on the social ladder, they would find themselves increasingly in situations where they were required to speak German. Most educated Czechs, in fact, communicated better in German than in Czech. Yet interest in the literary Czech language was growing.

5.3 The Revival of Spoken and Literary Czech

The Czech literary revival can be observed in three stages: Rationalism, Romantic Nationalism and 'Chauvinistic' Nationalism. The first two stages occurred almost simultaneously, but the Rationalists represented an older generation of thinkers, with ideas rooted in the Age of Reason. The revival of the literary and the spoken Czech language occurred paradoxically in those areas and during that period when it was the most threatened by the encroachment of German. The reasons for the revival can be attributed to the rise of nationalism throughout Europe following the French

Revolution.[7] But this does not explain the particular circumstances surrounding Czech nationalism that generally arose parallel to German nationalism outside of Bohemia. The Czech nationalists had been able to take a language that many assumed was on the point of dying and turn it into the principal language of modern-day Czechoslovakia.

5.4 The Planning of Modern Literary Czech

Decisions about the promotion of a given language are mainly made for economic and political reasons and represent the ideas of those in political power. The Modern Czech language planning counts as a classical model of the 'Cultivation approach' (Paulston 1974: 4). Paulston views the question of language planning in terms of two different approaches: 1) the 'Language policy' approach; 2) the 'Language cultivation' approach. Paulston defines the 'Language policy' approach, as the 'policies conducted by governments concerning language', or 'the policies establishing an official language'. This type of approach may be generally accepted by the population at whom it is directed. Often, however, this approach is not accepted by the population at large. In any case, it affects the linguistic behaviour of the population concerned, not necessarily the government itself. Language policy may even result in a situation of conflict with an existing elite. 'Language cultivation', by contrast, is described as the approach whereby elites themselves engage in language planning. They collectively decide on a linguistic standard, which had been established by language specialists. The elites then adhere to the standard themselves. By force of example, therefore, the population at large comes to view that standard as 'correct' and imbued with all the positive qualities that they generally attribute to the elite itself. The government, however, if in a conflict relationship with the elite, may view such efforts of language cultivation as a threat to their power, besides the fact that it may be opposed to existing language policy efforts. What is, however, remarkable in Bohemia is that a large segment of the ruling class collectively decided to change the language habits beginning in the 1820's. Most of these members of the Prague elite were people who were German in education, and had supposedly, therefore, the greatest stake in maintaining German as the hegemonic language. One must thus view romantic nationalism as both the motive and the cause of the revival of the literary Czech language.

In the late eighteenth and throughout the nineteenth century, Bohemian scholars, with the support of several old Bohemian aristocratic families, were the 'planners' of Modern Literary Czech. One of the first tasks of these thinkers was to create a linguistic identity. Creating a linguistic identity involved primarily establishing a literary standard. Consequently, they also were the individuals to determine 'correct' speech, 'substandard' speech and 'dialect'. These thinkers had to solve several problems before implementing their language policy: a) whether or not the dialect used by Jan Hus for standardizing would be understood in other parts of Bohemia and Moravia; b) updating the grammar (aorist and the imperfect were no longer used in spoken Czech) and simplifying the orthography; c) creating a modern vocabulary and eliminating archaisms. This process took a relatively short time, not much more than fifty years, and Literary

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[7] As Joseph Zacek stated in his article on nationalism in Czechoslovakia: 'The Czech "rebirth" appears to have been both a part of the general continental emancipation that stemmed from the Enlightenment and the French Revolution as well as a specifically Bohemian and Czech reaction to the rationalistic and romantic stimuli from abroad.' French nationalism proclaiming *'Les droits de l'homme'* [the rights of man], and the pan-Slav nationalism were the major factors that stimulated this movement (Zacek 1969: 175).

Czech became a vehicle of the Czech National Revival.

In studying dialects, furthermore, the language 'planners' had to draw a boundary separating their dialects from the dialects of a neighbouring Slavic language. Usually these language boundaries corresponded to political boundaries. Czech nationalists did not make claims to Prussian Silesia, even though the territory had been part of the Czech Kingdom prior to 1740, and the inhabitants spoke a transitional dialect between Czech and Polish. Likewise, the present boundary between the areas speaking Czech and the areas speaking Slovak correspond to the pre-World War I boundary between the halves of the Dual Monarchy.

5.5 Rationalists and Romantic Nationalists

At the beginning of the nineteenth century there were two intellectual currents in Bohemia which were both inspired by the ideas of contemporary German thinkers. In contrast to the impassioned expressions of nationalism by the end of the century the ideas of both of these groups were quite tolerant of any opposing views. The first group was represented by the older generation of thinkers, whose ideas had roots in the Age of Reason (Hermann 1975: 92-93). Josef Dobrovský was a typical example of a 'rationalist' scholar. Born in Hungary, the son of a Czech army officer, who was himself a native of Hradec Králové [Koniggrätz], he was the primary instigator of the Czech National Revival. Dobrovský's interest in the Czech language was primarily antiquarian. He himself wrote all his life in either German or Latin. His own belief was that the Czech language was bound for extinction.

In 1809, Dobrovský published the first modern Czech grammar, the *Ausführliches Lehrgebäude der böhmischen Sprache.* In his work Dobrovský held up as models both the writings of Czech literature and the language of folk songs and tales. He departed significantly from the model of the *Kralice Bible*, however, in his orthography. Dobrovský also advocated the use of 'purer' Czech--that is, a version of the Czech language that used fewer German loanwords. He favoured finding Old Czech equivalents wherever possible, or borrowing words from other Slavic languages.

Dobrovský lived in an era when German was the hegemonic language in Bohemia. German was the language of most educated people. It was also the language of commerce and carried the most prestige. Czech speakers thus bore the stigma of lower class, which further encouraged the propensity for moderately successful persons to prefer German. But the French Revolution had changed many things, including the way people viewed lower class culture. A new generation would come increasingly to identify with the 'people' and, as a result, to change the hegemonic language from German to Czech before the end of the century.

The leader of the second group, the romantic nationalists, was the historian František Palacký, a Moravian of Protestant background. Palacký took an interest in the Czech language while studying in a gymnasium in Bratislava. In March 1818, Palacký and his schoolmate, Josef Šafárik, published an anonymous article, 'Počátkové českého basnictví obvzláště prozodie' ['The Beginnings of Czech Poetry, Especially Prosody'], in which they championed the prosodic style based on *časomíra* [vowel length] in place of the prevailing one based on *přízvuk* [stressed and unstressed syllables]. It was a bold attack on the older generation of Czech scholars like Dobrovský, who were influenced by the German poetic traditions based on stress patterns (Zacek 1969: 17).

In 1823, Palacký, having finished his studies, came to seek his fortune in Prague, which he looked to as the centre of 'Czechdom', but which he found to be a totally

Germanized city. He was accepted into the house of the Sternbergs, for whom he worked out a family history. In 1818, another influential Prague family, the Kolovrats, who were closely connected to the Sternbergs, had made public a family treasure of Old Czech books and documents. This collection formed the basis for the Czech (Bohemian) Museum, which attracted a number of scholars, among whom were many of Dobrovský's pupils. As a result of this, they also founded the *Časopis českého musea* [*Journal of the Czech Museum*] which published the findings of this journal. In 1828, Kaspar von Sternberg had Palacký appointed editor of this journal, and under Palacký's energetic direction the journal became a phenomenal success.

Palacký expanded the journal so as to include much broader subject matter than simply the findings of the Czech Museum. In fact, because relatively few people could write Czech, Palacký had to write many of the articles himself. Furthermore, Palacký found himself to be the arbitrator between two different linguistic tendencies, that of the *antiquarians* and the *innovators*. The former were frequently older Protestants who insisted on using all of the illogical forms of past centuries simply on the grounds that they were in the *Kralice Bible*. The latter were people like the lexicographer, Josef Jungmann, who indiscriminately absorbed foreign words (especially German) and coined neologisms. The influence of Dobrovský was strong at the Czech Museum, and the journal helped popularize his ideas about Czech orthography. Palacký's greatest concern was that masses 'first learn to think in a Czech way, then to speak and write Czech' (Zacek 1969: 20). Gradually other contributors joined him, including many of the leading literary and scholarly figures in Bohemia. When Palacký turned over the Czech journal to Šafárik in 1838, it was already a well-established organ.

The Sternberg and Kolovrat families were generous benefactors of the Czech Museum and they gladly sponsored many scholars studying there. Most notable of these savants was Josef Jungmann, who during the 1820s and the 1830s was assembling a German-Czech dictionary, which combined word lists made by Dobrovský with other word lists that he had coined, based on Russian and Slavonic equivalents.[8] The purpose of this was to provide a Czech equivalent for every German word, and do away with the feeling of inadequacy Czech intellectuals felt when not using German. Although these wealthy patrons were very generous to Jungmann, their 'pockets were opened less wide' to Šafárik, who had followed Palacký's footsteps to Prague, where he found the study of Slavistics to entail a beggar's existence.

5.6 The Industrial Revolution

During the 1840s, there was growing tension in Prague due to the increasing numbers of displaced peasants who were migrating to the city. They formed a social group that was known at the time as the 'proletariat'. The condition of their life was extremely miserable (Carter 1973: 252). Many were unemployed, and those who worked did so under the worst possible conditions. Their frequent riots were usually accompanied by mindless destruction of machinery and attacks on visible scapegoats (Mendl 1947: 62 and Carter 1973: 265-266). Yet it is surprising that the most visible scapegoats at this time were Jews, not any group identified as Germans. They had as of yet to be imbued with the

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[8] To accomplish this task, Jungmann used the materials in Tomsa's Czech dictionary of 1790-99, Pelcl's word-list of the year 1800, and Dobrovský's German-Czech Dictionary with additions from Veleslavín's *Silva quadrilinguis* of 1558, and an incomplete seventeenth century vocabulary by Václav Rosa. The entries are supplied with German meanings and etymological notes (Mann 1957a: 5).

mythology of nationalism. In fact, although almost all of these workers were from Czech-speaking areas, language was a minor element in their personal identity.

The 'proletariat' was not a group with any coherent common outlook. They would, instead, look to the leadership of an elite for direction, and this elite would decide who the scapegoats were going to be. The elite that had the most influence over the 'proletariat' were those with whom they shared a common language: that is, the group of intellectuals and their supporters who were organized around the Museum. As a historian, Palacký was the builder of an ideology, that of Czech nationalism, based on the creation of a Czech-speaking elite.

Since his student days in Bratislava, Palacký wanted to see the day when Czech speakers ruled over Czech speakers. He resented the insinuation of inferiority that German speakers would make about Slavs. The general attitude of most German scholars, until the late 1950s, was that the Slavs owed their social and economic system to German colonization. Palacký wanted to set history straight by writing his own history that would contest the German speakers' claims. As an historian, he thus gave Czechs a pride in their past that made them want to build a better future. As a result, Czechs became increasingly resistant to becoming assimilated as they moved up the social ladder. Although nationalism had been present since the 1820s, its German counterpart was slower to develop in Prague. Few members of the German-speaking elite would be so foolhardy as to anger the lower classes by making claims of racial superiority. They tolerated Czech in addition to German. As Bohemia was still part of the Austrian empire, furthermore, there was little reason to believe that German would be totally pushed out by Czech. The two languages still occupied separate social spheres. Czech remained the language of the 'proletariat'--the lower classes--as well as of those climbing the social ladder. The 'old' rich and the Jews usually preferred German. German was also still the language of learning. Czech nationalists were often more fluent in German than in Czech.

5.7 The Spring of Peoples

Germans were not identified as a distinct social group, however, until the so-called 'Spring of Peoples', when a series of revolutions swept Germany and the Austrian Empire in March of 1848. During this period, the Austrian political system was plunged into a deep crisis which lasted until August, 1849. At this point in time, the Hapsburg dynasty had to deal with separate revolutionary governments established in Prague, Budapest, Venice, Milan and even in Vienna itself. In Germany, furthermore, the various revolutionary governments had formed a congress in Frankfurt-am-Main in order to form a unified state. They also invited delegates from Austria and Bohemia to join them. To represent Bohemia, they nominated none other than Palacký, and they appeared confident that he would accept their offer.

The original revolutionary manifesto was posted on March 6 in German and in Czech. The public responded to it *en masse*, and the language issue was not brought up. But the Frankfurt-am-Main question triggered a new explosion within days. Palacký responded to the offer to represent Bohemia with a public letter beginning with the words "I am a Czech of Slavic descent" (Pech 1969: 81; see also Urban 1982: 34). He stated, furthermore, that Austria had an historic mission of protecting the small nations of Europe. He thus came out as a powerful supporter of the government. The Vienna delegates did, however, send delegates to Frankfurt-am-Main, and many of the Prague delegates wanted to do likewise. Czech language newspapers responded to this, however, with a rain of abuse on Germans in general, and especially on their attempts to swallow up Bohemia. This had the double effect of isolating the supporters of the Frankfurt

Congress from the Czech-speaking public, as well as creating opposition by the lower classes and the new rich. This political tact is also significant in that it was the first time during the nineteenth century that German speakers are identified as a distinct nationality within the Czech Kingdom. The 'Germans', furthermore, seemed to gradually accept this national classification, and began increasingly, for the rest of the century, to develop and maintain their distinctness.

Of the Slavic nations that exist today, the Czechs of Bohemia-Moravia are unique in that they were subject to more than average attempts at Germanization, yet their language survived with very little trace of German influence. Germanisms, nevertheless, exist: in swear-words (*hergott*), certain foods (*knedlík* [German--*Knödl*]) and in certain expressions (*Já mám rád* [German--*Ich habe gern*]). These Germanisms, however, do not stand out, or otherwise call attention to the fact that the country had long been under German domination. Other Slavic languages that were less directly affected by German culture have, in fact, been more liberal in borrowing German words. In Russian, for example, the borrowing of German words, at times, actually received the official sanction of the tsarist government.

In the end, we find that Czech language did not decline as a spoken language, largely because its literary form was revived. Although it is true that in some simple societies spoken languages exist without a literary form, such is not possible in modern societies. We are all products of our education, and the further up the social ladder we are, the more this is true. Most of us could not hold a conversation for long without making references to vocabulary and using grammatical constructions derived from the literary language. It is rare, in fact, for a person not to be touched in some way by the literary language. Nowhere is this more evident than where the spoken language and the literary language are as dissimilar as English and Gaelic, or French and Breton. In the case of Czech, the literary revival was the one factor that saved it from decay and ultimate disappearance.

Literary languages are elite languages *par excellence*. This fact has become amply clear to ethnographers who study language as it is actually spoken by most people in a given region. Yet, the literary language virtually defines one's "national" identity, regardless of whether or not the person actually speaks the language as represented by the literary norm. The spoken language only begins to approximate the literary norm when it is spoken by the elites. In North America, we call this literary norm "Standard English". It is the use of this standard that gives the elites social prestige when dealing with subordinate classes, and makes it easier for them to assume leadership roles in society. The elites, thus, become the nation-building group, while the much more numerous subordinate classes become the material out of which nations are built.

In Bohemia we see, furthermore, the phenomenon of foreign domination. This has the tendency of producing a society with two separate elites, one native to the region and the other imported by the conquering power. The struggle between these two groups is conducted, among other means, through language. At issue is the question of what language will be used in elite society: that of the conquerors, or that of the native elite. The weapons in this struggle can vary from wholesale destruction of books written in the local language, to social ostracism from elite circles of individuals who refuse to speak the conqueror's language. These tactics, though temporarily successful, are usually ineffective in the long run. From the standpoint of history, literary languages tend to wax and wane depending on changing social and political factors.

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A NOTE ON NITINAHT NUMERALS[1]

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With one exception the numerals from one to ten in the three Southern Wakashan languages reveal the same system of counting in the first decade.[2]

	Makah	**Nitinaht**	**Ahousaht (Nootka)**
1.	ċak"a·ʔak	ċawa·ʔk	ċawa·k
2.	ʔaƛ	ʔaƛ	ʔaƛa
3.	wi·	qakaċ	qacċa
4.	bu·	bu·	mu·
5.	šuč	šuč	suča
6.	či·χpa·ɬ	či·χpa·ɬ	ṅupu
7.	ʔaƛpu	ʔaƛpu·	ʔaƛpu
8.	ʔaƛasub	ʔaƛasib	ʔaƛak"aɬ
9.	ċak"a·sub	ċawa·sib	ċawa·k"aɬ
10.	ƛaχ"	ƛaχ"	ḥayu

This system, like many others throughout the world, "fills in" the numerals for six through nine by figuring from the units for five and ten. Eight and nine are formed by back-counting from ten; the suffixes -sub, -sib and -k"aɬ all mean *lacks* or *needs*. Thus eight is literally *two lacking* and nine is *one lacking*.

Like the eighth numeral, the words for seven are also built upon ʔaƛ(a) *two*; but the added element -pu must have been an old suffix meaning something like *left*, *more* or

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1 The language names used in this paper are those traditional in linguistic and anthropological descriptions of Southern Wakashan. However, it should be noted that in October, 1984 the Nuuchahnuulth Tribal Council meeting at Tin-wis near Tofino, British Columbia proclaimed that the language and people previously known as *Nitinaht* be called henceforth *Ditidaht*. This new name more closely approximates the name as pronounced in the language itself.

Similarly, the name *Nootka* is not liked by many bands grouped under that term and the preferred designation is *Nuuchahnuulth*. However, this new name, which is primarily cultural in reference, presents problems to linguists for it includes both those who speak Nitinaht (or Ditidaht) as well as those from Bamfield and northward. When speaking of languages, I see no alternative to *Nootka* unless it be *Northern Nuuchahnuulth*.

2 The Ahousaht data have been provided by Mr. Peter Webster and Mr. George Louie, both of whom grew up on Flores Island in British Columbia. The Nitinaht forms are primarily from Mr. John Thomas. The Makah information is also from Mr. Thomas and *The Makah Counting Workbook*. Mr. Thomas' home village is Clo-oose, British Columbia.

extra.[3] So ʔaƛpu·/ʔaƛpu is *two more (than five)* or *two left (after five)*. Similarly, Nootka has also ṅupu *six* derived from ṅu(p), a second morpheme also meaning *one*, and -pu. Thus, the Nootka count from ċawa·k *one* to suča *five* and then (6) *one left*, (7) *two left*, (8) *two lacking*, (9) *one lacking*, (10) *ten*.

Counting to ten in Nitinaht and Makah follows the same system as Nootka except for the sixth numeral, čiˑxpaˑɬ, which has no known etymological connection with the other number words. This numeral does not fit into the system and is most likely an innovation,[4] for it would be strange to count *two left* without a preceding *one left*.

Although all three sets of number words are very similar, the Nitinaht and Makah vocabularies appear to have shared a common evolution apart from Nootka. In the next decade, however, Nitinaht is the odd man out. Both Makah and Nootka count *ten and one, ten and two*, etc., while Nitinaht adds a special "teen" suffix[5] to the numeral stems of the first decade, much as English does.

	Makah	**Nitinaht**	**Ahousaht (Nootka)**
11.	ƛaxʷ ʔiš ċakʷaˑʔak[6]	ċawayuˑkʷ	ḥayu ʔuḥiš ċawaˑk
12.	ƛaxʷ ʔiš ʔaƛ	ʔaƛayuˑkʷ	ḥayu ʔuḥiš ʔaƛa
13.	ƛaxʷ ʔiš wiˑ	qakaċayuˑkʷ	ḥayu ʔuḥiš qacča
14.	ƛaxʷ ʔiš buˑ	buyuˑkʷ	ḥayu ʔuḥiš muˑ
15.	ƛaxʷ ʔiš šuč	šučayuˑkʷ	ḥayu ʔuḥiš suča
16.	ƛaxʷ ʔiš čiˑxpaˑɬ	čiˑxpaˑɬayuˑkʷ	ḥayu ʔuḥiš ṅupu
17.	ƛaxʷ ʔiš ʔaƛpu	ʔaƛpayuˑkʷ	ḥayu ʔuḥiš ʔaƛpu
18.	ƛaxʷ ʔiš ʔaƛasub	ʔaƛasibayuˑkʷ	ḥayu ʔuḥiš ʔaƛakʷaɬ
19.	ƛaxʷ ʔiš ċakʷaˑsub	ċawaˑsibayuˑkʷ	ḥayu ʔuḥiš ċawaˑkʷaɬ

In the decades from twenty onward, Nitinaht departs even more radically from the other two languages. Both the Makah and Nootka systems are vigesimal while the Nitinaht is decimal.

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[3] Compare the etymologies of English *eleven* and *twelve*.

[4] Unless ʔaƛpu·/ʔaƛpu is a borrowing in Nitinaht and Makah. Note that it was just this etymon which was borrowed into the Northern Wakashan Kwakiutl. There *seven* is ʔəƛəbu. (Words borrowed into kʷaḵʷala have voiceless stops and affricates replaced by voiced ones, e.g., bidə from *Peter*, ǧiwas from Island Comox qiwas *deer*.)

It is most interesting to note that Nitinaht and Makah are not alone among Northwest languages with this apparent anomalous numeral for *six*. Dell Hymes has called to my attention the similar phenomenon in Chinook. The word for *seven*, sínamôkct, is built upon the one for *two*, môkct. However, the word for *six* bears no apparent relation to ēxt *one*. (These Chinook forms are from Boas 1911.)

[5] There may have been a longer stem for *ten* in the proto language, perhaps *ɣayuukʷ which by apocope (and the well attested shift /ɣ/ to /ḥ/ resulted in the Nootka ḥayu and by the loss of the first syllable gave yu·kʷ in Nitinaht. Compare the identical case in nearby Salish:

Saanich	čə́səʔ	two
Lushootseed	sá liʔ	two
Cowichan	yəsé?lə	two

[6] ʔiš in Makah and ʔuḥʔiš in Nootka are both more or less equivalent to *and*.

	Makah	Nitinaht	Ahousaht (Nootka)
20.	caqi·c	caqi·c	caqeyc[7]
30.	qax"u·k"	wiyu·k"[8]	caqeyc ʔuḥʔiš ḥayu
40.	ʔaƛi·q	ʔaƛi·q	ʔaƛi·q
50.	ʔaƛi·q ʔiš ƛaχ"	šaša·čtaʔdk"	ʔaƛi·q ʔuḥʔiš ḥayu
60.	wi·yu·q	či·χpa·łi·q	qacċi·q
70.	wi·yu·q ʔiš ƛaχ"	ʔaƛpu·q	qacċi·q ʔuḥʔiš ḥayu
80.	bukyi·q	ʔaƛasibi·q	muyi·q
90.	bukyi·q ʔiš ƛaχ"	ċawa·sibi·q	muyi·q ʔuḥʔiš ḥayu
100.	šuči·q	ʔuba·qƛ	suči·q

The word for *forty* is the same in all three languages, viz., ʔaƛi·q, which can have only one literal meaning, *two score*. Furthermore, every other occurrence of -i·q in both Makah and Nootka clearly means *score*. Note the words meaning *sixty*, *eighty* and *one hundred*.

In Nitinaht, however, -i·q has come to mean *ten* (or *-ty* if you prefer) for the numerals from sixty through ninety. Six times -i·q is sixty, not 120, etc.[9] Also, the numerals for fifty and one hundred both seem to be relatively recent neologisms; each has a transparently literal significance; šaša·čtaʔdk" is *hand on one side*. It is composed of šaša·č, a reduplication of šača·s *appendage on one side* (such as an arm or wing), and the suffix -taʔdk" *on the hand*. The concept behind this number seems to refer to the fact that counting on the fingers by tens is completed on one hand. (Note, by the way, that there is no etymological connection between the stem šaša·č and the etymon for five, šuč/suča in spite of their similarity.)

The word for *hundred*, ʔuba·qƛ, derives from ʔuʔu·ʔbχ *just fits* and the suffix -(a)q(a)ƛ *inside*. In the old days, a storage basket held one hundred dried salmon, whence the name ʔuba·qƛ *just fits inside* to represent *hundred*.

However, although it is the hundred dried salmon inside the basket that gives rise to the name ʔuba·qƛ, the suffix -(a)q(a)ƛ does not mean *inside the basket* but rather it refers to the fact that the basket was kept *inside* a cupboard (or more precisely an inset shelf built into the house wall opposite the side door).

From this concept of a basket full of one hundred dried salmon to stand for *hundred*, the suffix -taʔk *container, basket full* has come to play a role in number terms above one hundred. Thus, ʔaƛχtaʔk ʔuba·qƛ *two baskets full just fit inside* is *two hundred*, qakaċχtaʔk ʔuba·qƛ *three baskets full just fit inside* is *three hundred*, etc.

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[7] This may be a misrecording for caqi·c.

[8] The root for *thirty* in Nitinaht is the same etymon as *three* in Makah and the suffix is elsewhere *-teen*, i.e., *ten*. Notice also that the Makah term for *thirty* involves the same suffix etymon; and the root might prove to be the same etymon as qakać/qacċa *three* in Nitinaht and Ahousaht (if /k/ > /x/). If so, then the root etyma for *three* and *thirty* in Makah neatly match *thirty* and *three* in Nitinaht.

[9] Observe the similarity between the Albanian and Nitinaht counting systems - especially the formation of the numeral *forty* in both:

Albanian:	10	1'20	3'10	2'20	5'10	6'10
Nitinaht:	10	20	3'10	2'20	50	6'10

(Menninger 1969: 69).

Two facts suggest that the Nitinaht decimal system is an innovation. First, the word for *forty* (unless it is a borrowing) shows that at one time -i·q meant *score* in Nitinaht as well as in the neighbouring languages. Secondly, if Nitinaht counting by tens represents the older system, then one must posit two independent vigesimal innovations, one for Makah which lies to the south of Nitinaht and one for Nootka which lies to the north. This seems much less likely than supposing a single change from vigesimal to decimal.[10]

What was the impetus behind this change from vigesimal to decimal in Nitinaht? The neighbouring Salish languages are decimal and might have been an influence; but both Makah and Nootka also have Salish neighbours. Perhaps, however, the Nitinaht had a period of particularly close contact with some Salish group. Many years ago Laurence C. Thompson informed me that Mary Haas had collected a set of numerals from the Nitinaht at Pachena Bay which her consultant referred to as the "old" Nitinaht way of counting. She recognized these "old" numerals as being of Salish origin.[11] This counting does indeed suggest a strong Salish influence on at least some Nitinaht.

Up to this point we have assumed a single system of counting in each language which in Nitinaht has altered over the years. However, a couple of systems - or at least methods - may have coexisted. As pointed out above, the etymon čiˑχ̣paˑɬ *six* in Nitinaht and Makah does not fit well into the first decade of numbers in Southern Wakashan for it has nothing to do with the concept of *one more* or the like.

A clue to the origin of čiˑχ̣paˑɬ comes from one of my Ahousaht consultants, Mr. George Louie. He says that -paˑɬ means *add to*[12] and describes how his maternal grandfather, who was Ahousaht, counted by holding his right palm up facing away from himself. Using a finger of the left hand as a pointer, he went from the little finger to the index touching the top of each. Then, on the count of five, he pulled his thumb down so that it formed a right angle to the fingers. "Next he added the left hand saying čiˑχ̣paˑɬ." The idea behind čiˑχ̣paˑɬ is, in Mr. Louie's words, *add other hand*. Although this gloss is probably not literal, - the meaning of the root či(ˑ)χ̣ is apparently lost to memory - the general import is right. Since most finger counting changes hands for six, in time the word must have supplanted the original numeral among the Nitinaht and Makah.

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10 Note, however, that decimal systems do sometimes give way to vigesimal gradations. The Old Irish decimal counting has been completely replaced by the vigesimal in Modern Irish. Beginning in the eleventh century the French decimal system acquired some vigesimal gradations under Norman influence. In Sicily eggs, fruit, and people are all calculated by twenties - again due to the Normans (Menninger 1969: 64 ff.).

11 In fact, according to Thompson and M. Dale Kinkade they resemble most closely the numerals in the languages of the Tsamosan Branch of Salish (personal communication).

12 In *Nootka Texts* (Sapir and Swadesh 1939: 325), this suffix is glossed as *along with ...; in the same group with ....*

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ADVERBIAL GAPS IN GENERALIZED PHRASE STRUCTURE GRAMMAR

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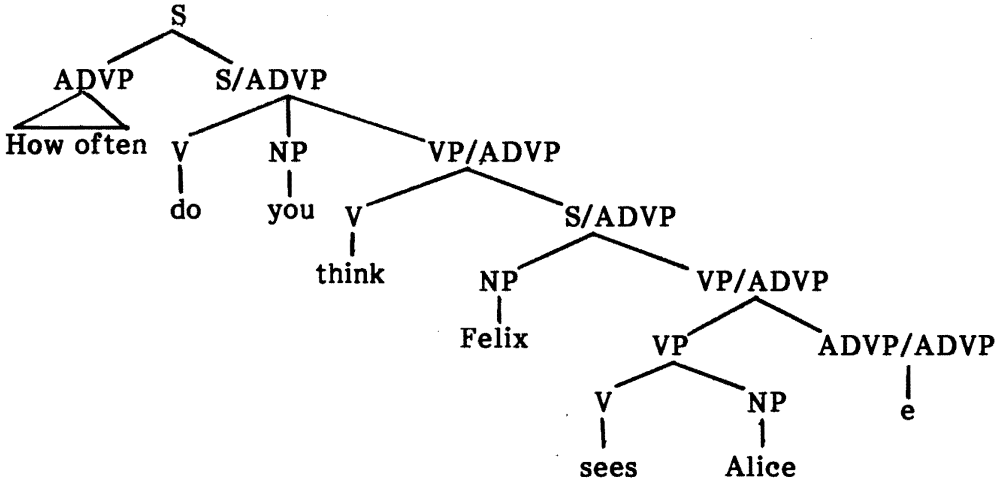
1. THE PROBLEM

Gerald Gazdar set out the foundations of a base-generated syntactic framework which has come to be known as Generalized Phrase Structure Grammar in a series of key papers (Gazdar 1979a, 1979b, 1981, 1982). A particularly significant result is his demonstration that unbounded dependency constructions (UDCs) can be described perspicuously in a context free grammar. The work on UDCs has been extended in this research paradigm in a number of articles (e.g., Gazdar, Klein, Pullum and Sag 1982, Sag 1983) and notably in the most extensive account of the theory, Gazdar, Klein, Pullum and Sag 1985 - hereafter, GKPS. I explore here an apparent problem within the context of GKPS's grammar, the treatment of adverbial gaps in interrogative constructions.

Consider tree (1).

(1)



Slash termination (the analog of a wh-trace) occurs in recursive VP.[1] It is not immediately obvious that the grammar in GKPS admits such structures. In particular, the local tree headed by the topmost VP/ADVP seemingly violates a general constraint

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[1] ADVP is used for the purpose of exposition here. I follow GKPS in assuming that adverbs of frequency and manner are [+ADV] APs (. Prepositional phrase adverbials - locatives, temporals, instrumentals, etc. - will also be discussed. I leave open whether they share a common feature [+ADV], though it seems consistent with the analysis of instrumentals and benefactives in Section (4) to assume that these do not.

on feature instantiation (the migration of features). This is the Head Feature Convention (HFC), which can be stated in simplified form as follows.

(2) The Head Feature Convention

i) The HEAD feature specifications of a head are an extension of the HEAD feature specifications of the category created by taking the intersection of the mother with the free feature specifications of the HEAD.
ii) The HEAD feature specifications of the mother are an extension of the HEAD feature specifications of the category created by taking the intersection of the head with the free specifications of the mother.

Roughly, this says that a head and the mother agree in HEAD features if they can. If some independent principle prevents either the head or the mother from containing the feature specification in question - i.e., it is not free - then they may disagree. But nothing prevents the head from agreeing with the mother for SLASH in the offending local tree:

(3) VP/ADVP
VP
ADVP/ADVP

The relevant immediate dominance (ID) rule is as follows.

(4) VP → H, ADVP

Unslashed VP corresponds to H, the head in the ID rule, and SLASH has been freely instantiated on the mother and the non-head daughter in the tree.[2] Since nothing prevents the head from containing SLASH, (3) violates the HFC.

This problem extends to other cases as well. The Head Feature Convention predicts that UDC gaps will not appear off the head path except under hihgly restricted circumstances. For example, it predicts the fixed subject constraint in English (Bresnan 1972), blocking extraction from subordinate subjects.

(5)*Who do you think that e loves Alice?

But apparently analogous cases are grammatical in Icelandic (cf. Maling and Zaenen 1978, 1982).

(6) Hver sagðir þú, að ____ væri kominn til Reykjavikur?
Who (nom.) said you that was come to Reykjavik?

Yet it would appear that such cases violate the HFC as in the following local tree.

(7) S/NP
NP/NP
VP

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[2] Strictly speaking, SLASH is instantiated in tree (1) only if termination works the way it does in GKPS's SLASH Termination Metarule 1. See (12) and the discussion there.

The HFC seems to predict that SLASHed categories off the head path are sanctioned only under two circumstances. First, in order to achieve slash termination at all, a feature coocurrence restriction (FCR) effectively overrides the HFC in lexically headed local trees (GKPS's FCR 6).

(8) FCR: SUBCAT ⊃ ~ SLASH

That is, lexical categories, which contain the feature SUBCAT(egorization), cannot contain SLASH and this causes the HFC to overlook the fact that the mother may contain SLASH while a lexical head daughter cannot, thus admitting local trees such as the following.

(9) VP/NP
V
NP/NP

That is, SLASH is not free in lexical V here. Second, if the HFC is satisfied because the head contains SLASH, this does not preclude SLASH from appearing on a sister.

(10) VP/NP
VP/NP
ADVP/NP

This accounts for parasitic gaps (cf. GKPS: 162-167). Nevertheless, this leaves the apparent residue of cases under consideration here.

Even if we somehow block the effect of the HFC here - a formal possibility discussed below - this goes counter to the Empty Category Principle (ECP) generalization, that an empty category must be governed in some strong sense of government (e.g., the initial version in Chomsky 1981), but using the most local version of c-command).[3] G. Pullum has demonstrated that the ECP generalization follows without stipulation from the form of the grammar presented in GKPS, where an empty category must be lexically governed in the narrow sense of c-command (i.e., the empty category is a sister to a lexical head).[4] Roughly, the grammar in GKPS yields the ECP generalization in the following way.

(11) ECP Generalization

i) A category C_i[+null]/C_i is the only source of an empty category and such categories are licensed only by ID rules which are induced by metarules; and
ii) the domain of metarules is just the lexical ID rules, those which introduce a lexical head.

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[3] See, for example, the simplified version of c-command (Reinhart 1983: 19). That is, α c-commands β if the first branching node above α dominates β. Even in Reinhart 1976 a less local version is employed. Alternatively, the relevant notion may be Pullum's IDC-command: a node α IDC-commands a node β if and only if the mother of α dominates β (Pullum 1986).

[4] This was presented in a Lansdowne lecture at the University of Victoria, Victoria, B.C., in October 1985. It will become clear in section 3 that the ECP is not an automatic consequence of the theory but, rather, simply true of the grammar in GKPS.

Metarules are a means in the theory for inducing new ID rules from existing ones and may be thought of as highly local analogs to transformations (or perhaps as analogs to syntactic lexical redundancy rules).

The main metarule for introducing [+NULL] and hence slash termination in GKPS is STM 1, which reads as follows.

(12) SLASH TERMINATION METARULE 1

$X \rightarrow W, X^2 \Rightarrow X \rightarrow W, X^2[+NULL]$

This rule takes as its input any lexical ID rule which introduces a BAR 2 category (i.e., X^2) and produces a new ID rule just like the first except X^2 contains the feature specification [+NULL] (which triggers the presence of SLASH in the tree due to a feature cooccurrence restriction: FCR: [+NULL] $\supset$ [SLASH]). For example, STM 1 may induce either of the ID rules (13b) or (13c) from (13a).

(13) a. VP → H[3], NP, PP[to] (e.g., *give*)
b. VP → H[3], NP[+NULL], PP[to]
c. VP → H[3], NP, PP[to, +NULL]

However STM 1 cannot apply to the recursive VP rule (4), since it does not introduce a lexical head.

At least three lines of inquiry are possible here. If we assume that tree (1) is essentially correct, slash termination can be forced at the expense of a stipulated ID rule, though this is a departure from the ECP generalization. Alternatively, we could propose an analysis which is compatible with the ECP generalization - that adverbials are somehow introduced in lexical VP and hence are within the scope of the metarules. Lastly, we could assume that such sentences simply do not involve unbounded dependency gaps.[5]

While this third alternative is certainly worth investigating, it faces serious problems in light of island phenomena and I turn to this in section 2 before exploring the other two approaches below. It will be shown that rejecting an UDC analysis of interrogative adverbials is not credible.

Section 3 explores the possibility of overriding the HFC by positing a stipulated slash-termination ID rule for VP adverbials. I will show that one can easily override the HFC in such an ID rule by following a somewhat different approach to slash termination, one advocated by Hukari and Levine (1987) for independent reasons. This approach may offer a viable solution for PP adverbials which do not permit preposition stranding.

I conclude in section 4 that the second approach is plausible in some cases, that some adverbials are accessible to the slash termination metarule because they may appear in

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[5] Yet another alternative is of course to reject the theory as presented in GKPS and to posit some other mechanism for regulating UDCs. See for example Pollard (1985), who also points out that, given Shieber's work on Swiss German (Shieber 1985) showing that natural languages are not context free, it is an open issue whether metarules should be constrained as in GKPS or, for that matter, whether other mechanisms should replace them.

lexical VP, either introduced by a metarule or appearing as optional complements in ID rules. These include adverbial PPs which permit stranding.

Section 5 raises the question of how sentences such as the following are derived.

(14) Felix hit flyballs in the park yesterday to members of the local scout patrol.

We have no explanation for the appearance of the locative and temporal adverbials between the complements of *hit* in (14) since such adverbials are not present in lexical VP in the analysis of section 4. I propose that the *to*-PP is, in effect, extraposed. Extraposition raises a number of general questions which are addressed in this section. I tentatively conclude that the extraposition of PP complements is sufficiently different from UDCs that a separate feature should be posited.

2. ADVERBIAL WH-PHRASES WITHOUT GAPS

Since adverbial modifiers are optional elements in sentences, we see no anomalies as we do in the cases of missing complements or subjects. Further there are no anomalies in inflection (e.g., nominative versus accusative case, subject-verb agreement). Suppose we simply say that no gap is involved in examples such as (15).

(15) How often did you say that you thought that Felix saw Alice?

Clearly some scope interpretation rule would be required in the semantic translation of such examples, since the wh-phrase may modify the matrix VP, the next lower VP or the lowest one, *saw Alice*.

The problem with this approach arises if we assume that island phenomena such as the complex NP constraint and the wh-island constraint are handled in the syntax of UDCs. If they are then these barriers will require an independent explanation for gapless adverbial wh-phrases, since these constraints hold here as well.

(16) How often did you say that you heard the claim that Felix saw Alice?
(17) How often did you say that you wondered who Alice saw?

(16) exemplifies the complex NP constraint and (17), the wh-island constraint. It would appear then that interrogative adverbials appear in UDCs despite the lack of direct evidence of gaps.[6]

A possible counterargument can be found in the work of M. Geis (1985), though that is not his intent. Geis notes that certain situational adverbs - locatives and temporals - may occur sentence-initially but apparently are not preposed via UDCs. For example, they cannot be interpreted as modifying the infinitives in the following examples (Geis' (6a)-(8a)).

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[6] This is of course the line of argumentation taken in Chomsky (1977), whatever one may make of his more doubtful cases (e.g., tough-movement). The fact that the data under consideration here involve overt wh-morphology certainly strengthens the case for grouping such adverbials with other instances of UDCs.

(18) Today, Sam will ask John to take the job.
(19) On Friday, Bill decided to move to Boston.
(20) On Friday, Bill was eager to marry Sue.

However he notes that corresponding interrogative adverbs admit this interpretation. (The examples are mine.)

(21) When has Sam asked John to take the job?
(22) When has Bill decided to move to Boston?
(23) When is Bill eager to marry Sue?

The latter examples would seem to dispel any counterhypothesis that sentence-initial interrogative adverbs are simply base generated initially without the presence of SLASH (i.e., Geis' treatment of (18)-(20). However he also cites examples (from Lakoff 1972) where the noninterrogative adverb may be interpreted with respect to a lower clause.

(24) a. I think Sam smoked pot last night.
b. Last night, I think Sam smoked pot.

If such adverbs may be interpreted 'downstairs' under certain conditions, then by extension such an analysis is logically possible for corresponding interrogatives. Conceivably the interpretation rule operates on structure, is sensitive to properties of verbs and passes the adverb down to a subordinate clause. If so, such an interpretive rule - while more restricted than UDCs - might well accidentally mimic the island constraints by not passing through verbs which take interrogative complements and not passing through NPs. This hypothesis is irrelevant in the case of interrogative locatives and temporals (cf. (21)-(23)), since the crucial reading under the UDC hypothesis goes through, where the interrogative is associated with the infinitive.[7]

But since adverbs are a disparate class (if a class at all), it perhaps behooves us to consider manner and frequency adverbs (i.e., -ly adverbs) in this light. While my intuitions are not sharp, it seems to me that such adverbs can be interpreted with respect to infinitives, though many cases may be recalcitrant.

(25) How often did Alice finally convince Felix to perform at her club?
(26) How often did Felix finally decide to perform at Alice's club?
(27) How slowly/carefully did Alice force Felix to go over the homework before turning it in?
(28) How slowly/carefully did Felix finally decide to go over his homework before turning it in?

Also, we seem to have rather clear cases of long-distance interpretation.

(29) How often did you say Alice believes Felix plans to perform at her club?
(30) How carefully did you say Alice believes Felix decided to go over the homework before turning it in?

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[7] Even if a tree exists where SLASH is not present - an analog to the noninterrogative case - the fact that there is an interpretation where the wh-phrase modifies the infinitive would seemingly indicate that an unbounded dependency construction exists as well.

These facts, coupled with the wh-island constraints, strongly suggest that such adverbs involve unbounded dependency constructions despite the lack of apparent gaps. The alternatives are either to force slash termination of adverbials by an ID rule or to assume they may appear in lexical VP where they are accessible to the slash termination metarule.

3. A SLASH TERMINATION ID RULE

Suppose that tree (1) is essentially correct. But we have seen that it appears to violate the Head Feature Constraint. Further, the adverb is not even accessible to the main slash termination metarule in GKPS, STM 1, as metarules are restricted to lexical ID rules (those which introduce lexical heads) and clearly the recursive VP rule (4) would not qualify. Consider the following ID rule.

(31) VP → H, ADVP[+NULL]

This would have the same effect as ID rules induced by STM 1: the presence of the feature [+NULL] forces slash termination, where SLASH must appear on ADVP due to a FCR (FCR 19: [+NULL] ⊃ [SLASH]) and on the mother due to the feature instantiation principles (specifically, the Foot Feature Principle). However (31) does not override the HFC, thus only the following local tree goes through.[8]

(32) VP/ADVP
VP/ADVP
ADVP[+NULL]/ADVP

We must somehow block SLASH from appearing on the head in this configuration. Inserting a negative condition would seemingly solve the problem, as in (33).

(33) VP → H[~SLASH], ADVP[+NULL]

However ID rules are not defined in GKPS so as to permit such boolean conditions. This extension can be avoided however by linking an arbitrary feature specification - call it +F - with a feature coocurrence constraint as follows.

(34) VP → H[+F], ADVP[+NULL]
(35) FCR: [+F] ⊃ ~[SLASH]

The FCR overrides the HFC, so the tree will be admissible where the head VP does not contain SLASH. A feature specification default will prevent random free instantiation of [+F].

(36) FSD: ~[+F]

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[8] Parasitic gap configurations such as the following are correctly licensed in GKPS.
(i) VP/NP
VP/NP
ADVP/NP
(ii) What did John eat e without cooking e?

This arbitrary use of a feature can be avoided if we take a somewhat different tack in achieving slash termination. Hukari and Levine (1987) argue that STM 1 should be reformulated as follows.

(37) Slash Termination Metarule 1 (Revised)

$X \rightarrow W,\ \alpha \Rightarrow X/\alpha \rightarrow W, e$ where α ranges over the BAR 2 categories.

This approach blocks pernicious cases of parasitic gaps, though this is beyond the scope of the present paper. However the following ID rule will, in effect, override the HFC without necessitating the use of ad hoc features.[9]

(38) VP/ADVP → H, e

Consider the following local tree.

(39) VP/ADVP
VP
e

Could the daughter contain SLASH[ADVP]? If it did, this would violate the FOOT Feature Principle which says, roughly, that the mother and at least one daughter must agree for any *instantiated* foot features - those not mentioned in the ID rule. Since SLASH[ADVP] is mentioned in the ID rule, (39) satisfies the FFP but the following would not.

(40) VP/ADVP
VP/ADVP
e

The SLASH feature on the daughter is instantiated while the one on the mother is inherited from the ID rule. In order to satisfy the FFP, the mother would have to bear a second instance of SLASH, which is impossible.[10] In short, SLASH is not a free feature in

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9 I take e to be a syncategorimatic terminal element as in Hukari and Levine (1986). In point of fact, it can be dispensed with in (38).

10 A category in GKPS is a partial function. As a function, it cannot contain two tokens of the same feature. It may occur to the reader however that the definition of a category as a function may not be violated if the values for the two tokens of SLASH are absolutely identical. I will argue here at some length that this turns out to be irrelevant as far as the feature instantiation principles of GKPS are concerned.

It is shown above that when an ID rule introduces SLASH on a mother category this overrides the HEAD Feature Convention. So rule (i), which is (43) in the text, licenses local tree (ii).

(i) S/NP → H[-SUB]
(ii) S/NP
VP

That is, SLASH is not free in the head, since (iii) fails to satisfy the FFP.

(iii) S/NP
VP/NP

However consider a tree such as (iv), where α indicates identity of values for SLASH.

the daughter and hence local tree (39) satisfies the HFC as the mother and the head agree in *free HEAD features* (cf. (2)).

This strategy is available for SLASH termination in other contexts which go counter to the ECP generalization. Pollard (1985) suggests that the restriction of slash termination to lexically headed contexts may be too parochial given the facts in Icelandic (cf. Maling and Zaenen 1982) and Norwegian (cf. Engdahl 1984) where subject extraction after a complementizer is possible (cf. (6) above). While STM 1 cannot bring about SLASH termination in subject position in English, due to the restriction to lexical rules, GKPS posit a second metarule, STM 2, which extracts subjects of finite clauses.

(41) Slash Termination Metarule 2.

$X \rightarrow W, V^2[+SUBJ, FIN] \Rightarrow X/NP \rightarrow W, V^2[-SUBJ]$

This correctly predicts the fixed subject constraint (Bresnan 1972).

(42) Who do you believe (*that) loves Alice?

Since the output of STM 2 contains, in effect, VP rather than S, a complementizer is impossible. In fact, the only way a metarule could possibly extract the subject in a configuration which includes a complementizer is if the complementizer is taken to be the head (i.e., the head of S-bar) and this departs from GKPS's assumption that S-bar is a projection of V. However an ID rule along the following lines will permit extraction of subjects in a language which does not show the fixed subject constraint.

(43) $S/NP \rightarrow H[-SUBJ]$ (i.e., VP)

(iv) $S/NP_\alpha/NP_\alpha$
VP/NP_α
It is conceivable that the mother is a possible category, since a set {a, a} is a well-defined formal object ({a, a} = {a}). Note that we cannot invoke the fact that categories are partial functions, since we have two tokens of the same feature specification, SLASH is not assigned distinct values. Assuming (iv) meets the HFC, does it satisfy the FFP? As it turns out, it does not and therefore there is no possible projection where SLASH is present in the head (i.e., it is not a free feature), so (ii) is admitted by the HFC.

I discuss below reasons why the FFP should be interpreted so as to ignore gratuitous multiple tokens of feature specifications and, in conclusion, I show that this is, in fact, the only correct interpretation of the FFP in GKPS.

GKPS (1985: 165) argue that parasitic gaps are not admitted in trees involving subject extraction via SLASH termination metarule 2 (STM 2). STM 2 introduces SLASH on the mother category.

(v) STM 2
$\overline{X} \rightarrow \overline{W}, S[FIN] \Rightarrow X/NP \rightarrow W, VP[FIN]$

(vib), for example, is derived from (via) by STM 2, where SUBCAT[40] verbs include *believe*.

(vi) a. $VP \rightarrow H[40], S[FIN]$
b. $VP/NP \rightarrow H[40], VP[FIN]$

(vii) Who do you believe saw himself/* _____ in the mirror?

While local tree (viii) is admitted by the grammar, GKPS argue that (ix) is not.

A solution employing ID rule (38) may be a viable approach to a problem of preposition stranding. General locative and temporal adverbial PPs do not permit stranding (cf. Hornstein and Weinberg 1981).[11]

(44) a. On which day will Harry deliver the lecture?
b.*Which day will Harry deliver the lecture on?
(45) a. In which country do they hold elections every Thursday?
b.*Which country do they hold elections every Thursday in?

If these adverbials are accessible to UDCs only through ID rule (38), preposition stranding is clearly impossible, since an adverbial phrase does not even appear on the right-hand side of the rule. This then seems to be a promising solution at least in the case of locative and temporal PPs, which do not permit stranding.

4. ADVERBS IN LEXICAL VP

Some adverbs permit preposition stranding, a fact which does not follow from a slash termination ID rule (38).[12] Consider the following.

(46) a. With which tool did Felix fix the radiator?
b. Which tool did Felix fix the radiator with?
(47) a. For whom did Felix sing that song?
b. Who did Felix sing that song for?

Suppose we say such adverbial PPs are in lexical VP. In point of fact, the line between

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(viii) VP/NP
V
VP[FIN]
(ix) VP/NP
V
VP[FIN]/NP

The latter violates the FOOT feature principle, since the daughter VP contains instantiated SLASH while the mother does not. That is, SLASH is inherited in the mother and, further, the authors assume that the mother cannot contain a second token of SLASH[NP] (i.e., VP/NP/NP).

But, as noted above, $\{\alpha, \alpha\} = \{\alpha\}$ -- VP/NP is equivalent to VP/NP/NP and vice versa, if both tokens of NP are identical. If a tree such as the following passes the FFP, GKPS's argument would not go through. In fact, the distinction between inherited and instantiated features in the FFP is at risk, since for any case where a feature specification is inherited, we can imagine an analogous category containing an additional, instantiated token of the same specification.

(x) $S/NP_\alpha/NP_\alpha$
VP/NP_α

It may not be immediately obvious that multiple tokens of specifications is relevant to the case at hand, since one might assume that the NP gap in the VP daughter in (x) could not be identical to the inherited SLASH[NP] specification on the mother. The latter would have to be nominative (since the AGR value in finite VP forces this). In point of fact, the NP value of SLASH in the daughter would also be nominative if STM 2 applied in a subordinate structure, as in the following example,

modifiers and complements is fuzzy in this domain.[13] Possibly instrumental adverbs are introduced as optional complements by the following metarule.

(48) Instrumental Metarule.

VP → W => VP → W, PP[with]

Conceivably this applies to *for*-PPs as well, though for some verbs we also find the ditransitive construction.

(49) Felix fixed a sandwich for Alice.
(50) Felix fixed Alice a sandwich.

At least in these cases we may simply treat the *for*-PP as an optional complement in a basic ID rule.[14]

(51) VP → H[#], NP, (PP[for])

The latter solution may also be plausible for *on*-PP instrumentals, which probably are more restricted than *with*-instrumentals.

(52) a. Felix played the sonata on a violin.
b. Which violin did Felix play the sonata on?
(53) a. Felix computed the answer on my sliderule.
b. Which sliderule did Felix compute the answer on?

The line between *on*-instrumentals and locatives in lexical VP is not clear, as in the

---

where e is given as a guide, though it would not be in the tree.
(xi)*Who do you believe e thinks e is clever?
So we would be considering a category VP/NP/NP, where the two tokens of SLASH[NP] could be identical - a set containing two tokens of the same element.

This problem would appear to arise in *tough*-constructions as well.
(xii)*This salami, this salami is difficult to slice e.
The offending local tree is (xiii).
(xiii) A^{1}[AGR[NP]]/NP
A
VP[INF]/NP/NP
One token of SLASH[NP] is inherited in VP and the other is instantiated. The instantiated token of SLASH forces SLASH on the mother, while the inherited one agrees with AGR in the mother by the CAP.

As it turns out, multiple tokens of the same feature specification - while formally possible if we view categories as sets - is not pernicious as far as the FOOT Feature Principle is concerned. The FFP is stated as follows (GKPS: 82).
(xiv) Definition 2: Foot Feature Principle
Let Φ_r be the set of projections from r where $r = C_0,\cdots,C_n$.
Then $\phi \in \Phi_r$ meets the FFP on r if and only if
$\phi(C_0) \mid \mathbf{FOOT}\text{-}C_0 = \bigcup_{1\leq i\leq n} \phi(C_i) \mid \mathbf{FOOT}\text{-}C_i$
$\phi(C_0) \mid \mathbf{FOOT}\text{-}C_0$ is a subset of $\phi(C_0)$, namely the one whose domain is $\mathbf{FOOT}\text{-}C_0$ This, in turn is $\{f \mid f \in (DOM(\phi(C_0)) \cap \mathbf{FOOT}) - DOM(C_0))\}$. Suppose we say that SLASH is in $DOM(\phi(C_0))$ twice and perhaps even in $(DOM(\phi(C_0)) \cap \mathbf{FOOT})$ twice.

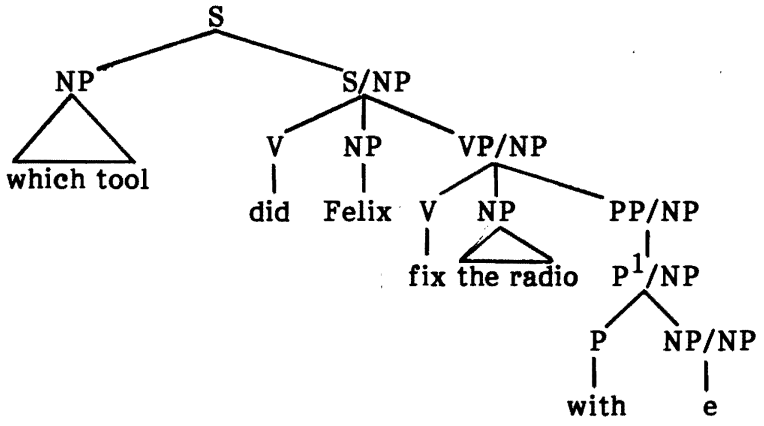
following examples.

(54) Which lathe did Alice turn these posts on?
(55) Which sink did Felix wash the dishes in?

It seems reasonable to assume in all such cases that PP is in lexical VP. The question is whether it is an optional element in a lexical ID rule (i.e., in a subcategorization frame, a functional structure) or it is introduced by a metarule. I leave this open.

Suppose then that (46b) is as in the following tree (56).

(56)



Local tree (57) is well-formed, since the HFC is always overriden when the head is lexical because a FCR prevents lexical categories from containing SLASH (i.e., it is not free in lexical categories).

(57) VP/NP
V
NP
PP/NP

Even so, it cannot be in (DOM(ϕ(C_0)) $\cap$ **FOOT**) - DOM(C_0)), as it is in DOM(C_0). Put differently, SLASH $\notin$ {{SLASH, SLASH} - {SLASH}}, since the set difference here is {x | x $\in$ {SLASH, SLASH} & x $\notin$ {SLASH}}, the empty set.

11 Grammaticality judgements vary in this domain and it is possible that locatives may pattern more like instrumentals (discussed below) under certain circumstances, as in (i) Which restaurant did John meet Mary at?
Some speakers may accept this under the interpretation where a prearranged rendezvous is involved.

12 It is relevant to note that stranding would be impossible even given the earlier analysis in (34) through (36), since the presence of [+NULL] forces SLASH termination due to a feature specification default in GKPS: FSD 3: ~[NULL]. If a [+NULL] category is a mother in local tree it will violate this default and be inadmissible, hence it must terminate in the phonologically null lexical item e.

13 Bresnan (1972: 165), for example, treats instrumentals as optional complements.

14 This is essentially GKPS's treatment, though the PP is not optional in their ID rule.

We arrive then at a strong hypothesis: prepositional phrases which permit stranding are in lexical VP, those which do not are outside. This result is reminiscent of Hornstein and Weinberg's (1981), though the analysis above is framed in a well-defined theoretical context in contrast to HW's use of reanalysis in the domain of a lexical head. PP in recursive VP is accessible to termination through an ID rule (38) but stranding is impossible since that entails free instantiation of SLASH on a nonhead in recursive VP, which violates the HFC. PP in lexical VP is accessible to termination via STM 1 but stranding is possible since free instantiation of SLASH on a nonhead is permitted without violating the HFC, as lexical V cannot contain SLASH.

5. ADJECTIVAL ADVERBS AND PP EXTRAPOSITION

We have not determined whether adjectival adverbs - those treated as AP[+ADV] in GKPS (e.g., *ly*-adverbs) - appear in recursive or lexical VP. The facts are not clear. I tentatively conclude in this section that such adjectival adverbs are in recursive VP. This entails extraposition of complements when the adverb appears between the verb and a complement, though PP extraposition seems warranted in other cases as well. A new categorial feature - SHIFT - is posited in order to account for differences between PP extraposition and unbounded dependency constructions.

No analog to stranding exists in adjectival adverbs since they do not take internal constituents which would be accessible to extraction. For example, they do not permit complements even if corresponding adjectives do.

(58) Felix was tired of the commotion.
(59) Felix left tiredly (*of the commotion).

These adverbs seem to be permitted between a verb and its complements, which on first blush might lead one to believe they appear in lexical VP like instrumentals.

(60) Felix sends roses frequently to his grandmother.
(61) Harold talks to Alice often about his problems.

However locatives and temporals also interrupt elements in lexical VP.

(62) Felix sent roses on Valentine's Day to his grandmother.
(63) Harold talked to Alice in the park about his problems.

Hornstein and Weinberg (1981) note that preposition stranding is blocked in these contexts.

(64) a. Who does Felix send roses to frequently?
b.*Who does Felix send roses frequently to?
(65) a. Which problems does Felix talk to Alice about often?
b.*Which problems does Felix talk to Alice often about?
(66) a. Who did Felix send roses to on Valentine's Day?
b.*Who did Felix send roses on Valentine's Day to?

They assume the PP complement is extraposed when a temporal or a locative intervenes and that adjectivals occur in minimal VP due to scrambling. It is not obvious to me that the two cases should be distinguished, although the facts are not altogether clear in this domain as grammaticality judgements are somewhat fuzzy. For example, if an adjectival

adverb is quantified stranding is much better.

(68)?Who does Felix send roses most often to?
(69)?Which problems does Felix talk to Alice most frequently about?

Suppose we say that both types of adverbs block stranding and that they do not occur in lexical VP. We can assume that whenever complement PPs follow such adverbs they are extraposed. This raises certain questions. If extraposition involves the feature slash we would predict that the extraction site should be an island, though this is not the case.

(70) Who does Felix [talk to e e] frequently about his problems?
(71) Who did Felix [talk to e e] in the park about his problems?

That is, the lowest VP in these examples - [talk to e e] should be an island, otherwise it would contain two tokens of SLASH, which is impossible.[15]

(72) VP/NP/PP[about]
V
PP[to]/NP
e

A second problem involves the possibility that such rightward dependencies are bounded, which certainly does not follow from the use of SLASH.

(73) a. ? Harold told me that Felix talks to Alice frequently about his problems a few minutes ago.
b. * Harold told me that Felix talks to Alice frequently a few minutes ago about his problems.
(74) a. Marsha persuaded Felix to talk to Alice frequently about his problems a few minutes ago.
b. * Marsha persuaded Felix to talk to Alice frequently a few minutes ago about his problems.

That is, it appears that the dependency cannot extend beyond the relevant head path, as discussed below. However Gazdar (1981) concludes that rightward dependencies are unbounded on the strength of the following examples.[16]

(75) a. I have wanted to know exactly what happened to Rosa Luxemburg for many years.
b. I have wanted to know for many years exactly what happened to Rosa Luxemburg.
(76) a. I had hoped that it was true that Rosa Luxemburg had actually defected to Iceland for many years.
b. I had hoped that it was true for many years that Rosa Luxemburg had actually

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15 See footnote 10. The argument here is, of course, not compelling since cases of multiple extraction are well documented in the literature (e.g., Maling and Zaenen 1982, Rivero 1980, Rizzi 1978). Cases of putative multiple extraction exist in English if one assumes tough-movement involves SLASH, as do GKPS.
(i) Which violin would this sonata be easy to play on?

16 Gazdar cites Postal (1974), citing Witten (1972) for examples (75) and Janet Fodor, personal communication, for (76) and (77) (Gazdar's (71)-(73)).

defected to Iceland.

(77) a. I have wanted to meet the man who spent so much money planning the assassination of Kennedy for many years.
b. I have wanted to meet for many years the man who spent so much money planning the assassination of Kennedy.

I am not so sure these go through unless *for many years* is a parenthetical (with appropriate comma pauses). Cases where a complement - an agent phrase - intervenes do not strike me as grammatical.

(78) a. Felix is believed (by the police) to know what happened to Rosa Luxemburg (by the police).
b. * Felix is believed to know by the police what happened to Rosa Luxemburg.

(79) a. Felix is thought (by many people) to believe that is true that Rosa Luxemburg had actually defected to Iceland (by many people).
b. * Felix is thought to believe by many people that it is true that Rosa Luxemburg had actually defected to Iceland.

(80) a. Felix is believed (by the police) to have met the man who spent so much money planning the assassination of Kennedy.
b. * Felix is believed to have met by the police the man who spent so much money planning the assassination of Kennedy.

Unfortunately the relevant data do not come to us on a silver platter. Examples (78) through (80) may be beside the point if the agent phrase itself is extraposed whenever it is not adjacent to the passive participle, since the (b) examples may involve extraposition of both the agent and the final constituent. Leaving aside multiple extractions as in (63) and (64), we might say that (78b)-(80b) are ungrammatical because the constructions involve multiple instances of SLASH. For example, *believed to know* in (78b) may have the following local tree.

(81) VP/PP[by],/S
V
e
VP/S

The problem here is the fact that infinitives and subordinate clauses are final in lexical VP in English, so it is impossible to identify clear cases where elements from these constituents are extraposed over complements of higher verbs. We could always assume multiple extraction as in (81). It would seem that we are reduced to considering extraposition over adverbs, where the facts are unclear. In the face of examples such as (73) and (74), let us assume that extraposition of complement PP is bounded. This leaves open the possibility that some other mechanism is responsible for other cases of rightward dependencies such as heavy NP shift in (77).

Given that PP extraposition contexts are not extraction islands (cf. (70) and (71)) and taking the somewhat arguable position that we are dealing with a bounded dependency, it is less than obvious that the feature SLASH is involved. These problems vanish if we posit a second feature much like SLASH in the following metarule.

(82) PP Extraposition Metarule.

VP → W, PP[PFORM α] => VP[SHIFT [PP[PForm α]]] → W

This feature, SHIFT, will be a HEAD feature and a control feature, though not a FOOT

feature. The top of an extraction dependency is handled by the following ID rule.[17]

(83) VP → H[SHIFT X^2], X^2

Unlike SLASH, SHIFT does not involve unbounded dependencies since it is not directed up beyond the head path by the Foot Feature Principle and is subject to a feature specification default blocking gratuitous instantiation: FSD: ~[SHIFT].[18]

This prevents SHIFT from migrating off the head path, hence blocking UDCs in the ungrammatical (73) and (74) above, as in the following local trees (where // denotes SHIFT).

(84) VP//PP
V
S//PP

(85) VP//PP
V
NP
VP//PP

SHIFT violates the FSD in both the mother and the daughter. If SHIFT were a FOOT feature, the FSD would be forgiven. Since it is not, no principle sanctions its presence in these categories, in violation of the FSD.[19]

Since SHIFT and SLASH are distinct features, they may cooccur as in the following tree.

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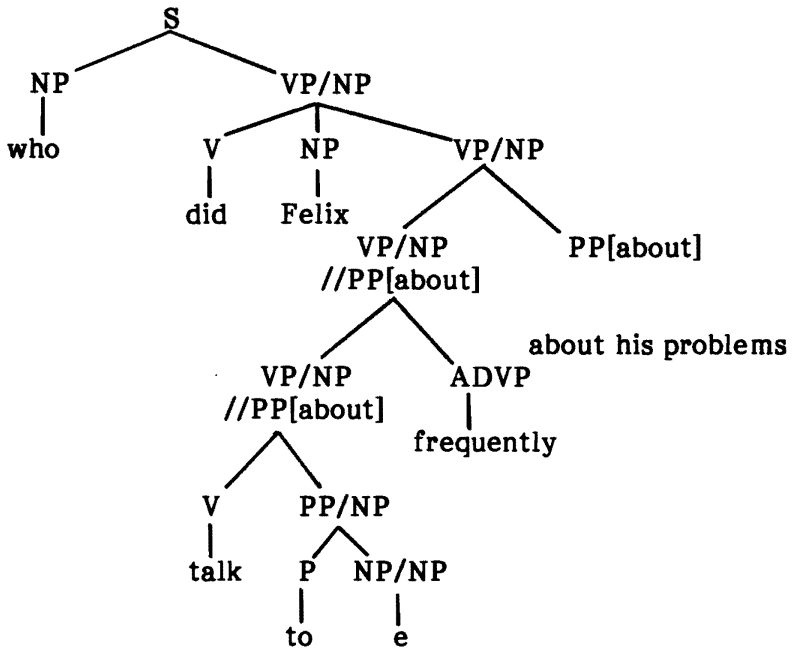
17 Clearly SHIFT must then be a control feature, as the CAP must trigger agreement between PP and the value of SHIFT.

18 If I am wrong in assuming that PP extraposition is bounded, then SHIFT is a FOOT feature. Positing a distinct categorial-valued feature would still account for the possibility of apparent multiple extraction (cf. (73) and (74)) in face of the well-documented fact that multiple wh-extractions are not possible in English. Clearly a solution along these lines is also available for tough-movement constructions (cf. (i) in footnote 15), where a categorial-valued HEAD and FOOT feature, call it TUFF, could be posited at no great expense to the grammar.

19 Nothing prevents matrix S from containing SHIFT, though, yielding cases where there is no controller:
(i) [$_{S//PP[about]}$Felix[$_{VP//PP[about]}$[$_{VP/PP[about]}$talked to Alice e] frequently]]
This strikes me as no more of a problem than analogous cases where SLASH finds no controller in GKPS's analysis.
(ii) [$_{S/NP}$Felix[$_{VP/NP}$talked to Alice about e]]
We can say that these are well-formed clauses but the pragmatics blocks them from functioning as independent sentences, though this is an arguable point and perhaps some principle should guarantee that such features ultimately find a controller.

(86)



Clearly PP extraposition predicts that stranding will be impossible in these contexts (cf. (64)-(67)) since the complement PP will not be in lexical VP so free instantiation of SLASH will violate the HFC. While it may be premature to draw any firm conclusions, this seems to be a possible approach to rightward dependencies.

6. CONCLUSIONS

This paper has offered an account of UDCs involving adverbials which distinguishes between cases where preposition stranding is or is not permitted. Adverbs (or optional PP complements) in lexical VP are accessible to SLASH termination by STM 1 and also permit stranding via free instantiation of SLASH in PP in the usual way. PP adverbs which do not permit stranding are in recursive VP and would not participate in unbounded dependency constructions in the grammar presented in GKPS. However a SLASH termination ID rule (38) was proposed, following along the lines of a revision of STM 1 in Hukari and Levine (1987).

(38) VP/ADVP → H, e

Since SLASH is then inherited in any trees projected from this rule, this correctly overrides the HFC. It was also suggested that a solution along this line may work for languages which seem to permit free subject extraction (i.e., lacking the fixed subject constraint). By extension, this lends further credibility to the approach in Hukari and Levine (1987). This does however clearly show that the ECP generalization represents only the unmarked case in generalized phrase structure grammar, a state of affairs which may be overridden by an ID rule which introduces unbounded dependency features.

A possible solution to bounded rightward dependencies was proposed in the context of PP extraposition, employing a new categorial feature SHIFT. While the hypothesis that adjectival adverbs are always in recursive VP may warrant further investigation,

extraposition around locative and temporal adverbs seems plausible.

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COMPOUNDING IN SPANISH

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In any preliminary examination of Spanish morphology, it becomes readily apparent that compounding is a highly productive process in the language. A closer look at the structure of compounds that are constructed of free forms also suggests that they are interpreted by the native speaker of Spanish as being phrasal in nature.

Compound nouns, adjectives, and verbs fall into (at least) the following categories:

1) Nouns:	**2) Adjectives:**	**3) Verbs:**
a) $[\text{Verb} + \text{Noun}]_{N}$	a) $[\text{Noun} + \text{Adj}]_{Adj}$	a) $[\text{Prep} + \text{Verb}]_{V}$
b) $[\text{Adj} + \text{Noun}]_{N}$	b) $[\text{Adj} + \text{Adj}]_{Adj}$	b) $[\text{Adj} + \text{Verb}]_{V}$
c) $[\text{Prep} + \text{Noun}]_{N}$	c) $[\text{Adj} + \text{Noun}]_{Adj}$	c) $[\text{Oddities}]_{V}$
d) $[\text{Noun} + \text{Noun}]_{N}$		
e) $[\text{Oddities}]_{N}$		

It can be seen from the above classification scheme that many kinds of combinations occur, and a specified combination may form new compounds in more than one category. For example, the combination [Adj + Noun] can be seen to contribute to both the noun and adjective categories. Verbs, adjectives, prepositions and nouns may all combine with a noun as the second element to form new compound nouns. The category [Oddities] in each case contains at present only one or two unusual examples which probably do not represent productive patterns.

The examples that follow are shown in standard Spanish orthography. Note that word-initial */r/*, which is trilled, is written */rr/* when compounding places it in intervocalic position; this device distinguishes it from the normally flapped intervocalic */r/*, i.e., *para + rayos = pararrayos*. The definite articles usually listed with nouns to show grammatical gender play no part in the compounding process and have therefore been omitted. Plurals of nouns are shown in parentheses wherever they differ in form from the singular.

The majority of COMPOUND NOUNS belong to category (1a) and are masculine in gender (even if their noun element is feminine) unless they refer specifically to a feminine agent. The first element is a transitive verb whose object is the following noun according to the formula '{Agent/Instrument} that VERB (the) NOUN_{Obj}'. The first two compounds listed below can be used as either agent or instrument, depending on the context, and those that follow represent either agents or instruments.

Verb:		Noun:		Compound:	
salvar	'save'	*vida(s)*	'life'	*salvavidas*	'lifeguard' 'life preserver'
guardar	'protect' 'keep'	*ropa*	'clothes'	*guardarropa*	'cloakroom, wardrobe' 'cloakroom attendant'
rascar	'scratch' 'scrape'	*espalda(s)*	'back' 'spine'	*rascaespalda(s)*	'backscratcher'
"		*tripa(s)*	'gut' 'intestine'	*rascatripas*[1]	'third-rate violinist'
"		*cielo(s)*	'sky' 'heaven'	*rascacielos*	'skyscraper'
matar	'kill'	*mosca(s)*	'fly'	*matamoscas*	'fly swatter'
"		*burro(s)*	'donkey'	*mataburros*	'dictionary'
"		*fuego(s)*	'fire'	*matafuego(s)*	'fire extinguisher'
cubrir	'cover'	*cama(s)*	'bed'	*cubrecama(s)*	'bedspread'
"		*tetera(s)*	'teapot'	*cubretetera(s)*	'tea cosy'
espantar	'scare'	*pájaro(s)*	'bird'	*espantapájaros*	'scarecrow'
oler	'sniff' 'smell'	*flor(es)*	'flower'	*hueleflor(es)*	'idiot, fool'
		guiso(s)	'stew'	*hueleguisos*	'sponger, uninvited guest'
pasar	'pass (by)'	*tiempo(s)*	'time'	*pasatiempo(s)*	'pastime'
limpiar	'clean'	*bota(s)*	'boot'	*limpiabotas*	'bootblack'
"		*chimenea(s)*	'chimney'	*limpiachimeneas*	'chimney sweep'
"		*diente(s)*	'tooth'	*limpiadientes*	'toothpick'
guardar	'protect' 'keep'	*bosque(s)*	'forest'	*guardabosque(s)*	'gamekeeper'
"		*coche(s)*	'car'	*guardacoches*	'parking attendant'
"		*cabra(s)*	'goat'	*guardacabras*	'goatherd'

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[1] Some of these compounds have humorous or perjorative intent and supplement already existing nouns: *rascatripas* ~ *violinista*, *mataburros* ~ *diccionario*, *sacamuelas* ~ *dentista*, etc.

Verb:		Noun:		Compound:	
guardar		*costa(s)*	'coast' 'shoreline'	*guardacostas*	'coastguard vessel'
"		*espalda(s)*	'back'	*guardaespaldas*	'bodyguard'
"		*meta(s)*	'goal'	*guardameta(s)*	'goalie'
"		*joya(s)*	'jewel'	*guardajoyas*	'jewel case'
quitar	'remove' 'take away'	*sol(es)*	'sun'	*quitasol(es)*	'sunshade'
"		*esmalte(s)*	'enamel'	*quitaesmalte(s)*	'polish remover'
"		*mancha(s)*	'stain'	*quitamanchas*	'stain remover'
"		*miedo(s)*	'fear'	*quitamiedos*	'handrail'
"		*pena(s)*	'sorrow'	*quitapenas*	'distraction'
"		*nieve(s)*	'snow'	*quitanieves*	'snowplow'
sacar	'extract'	*muela(s)*	'molar'	*sacamuelas*	'dentist'
"		*corcho(s)*	'cork'	*sacacorchos*	'corkscrew'
"		*falta(s)*	'fault'	*sacafaltas*	'faultfinder'
"		*punta(s)*	'point'	*sacapuntas*	'pencil sharpener'
portar	'hold' 'carry'	*pluma(s)*	'feather'	*portaplumas*	'penholder'
"		*voz (voces)*	'voice'	*portavoz (-voces)*	'spokesman'
"		*avion(es)*	'airplane'	*port(a)aviones*	'aircraft carrier'
"		*papel(es)*	'paper'	*portapapeles*	'briefcase'
romper	'break'	*hielo(s)*	'ice'	*rompehielos*	'icebreaker'
"		*cabeza(s)*	'head'	*rompecabezàs*	'(jigsaw) puzzle'

In all cases, the surface form of the compound parallels the corresponding verb phrase using the third person singular, present tense of the verb, as can be seen in the following examples:

El muchacho limpia chimeneas.
'The boy cleans chimneys.'

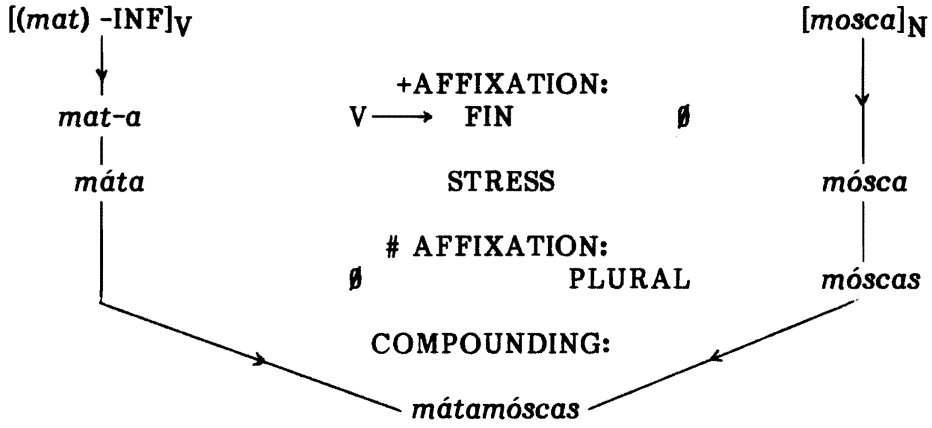
(*el*) *limpiachimeneas*
'(the) chimney sweep'

Mi tía pasa el tiempo tejiendo.
'My aunt passes the time knitting.'

(*el*) *pasatiempo*
'(the) pastime'

Fernando huele las flores.	*(el) hueleflor*
'Ferdinand smells the flowers.'	'(the) idiot, fool'

In addition, the last example contains an irregular verb whose root vowel changes in the present tense, thus providing evidence that the infinitive does not supply the basis for the compound: *oler*, 'to smell', does not produce **oleflor*. A derivation can then proceed as shown below for *el matamoscas*, 'fly swatter':



Note that the number (usually plural) of the constituent noun is often determined by the requirements of the verb phrase: a *salvavidas* saves lives, a *matamoscas* is used to kill flies, a *guardajoyas* usually contains more than one jewel, and a good *espantapájaros* should scare all the crows. There seem to be no phonological reasons why the singular noun element does not occur (**salvavida*, **matamosca*, **guardajoya*, **espantapájaro*). On the other hand, one has only one back to scratch with a *rascaespalda*, one sun to be protected from by a *quitasol*, a *matafuego* is designed to extinguish an unexpected fire, and a *guardameta* defends only one goal. This is only a general consideration, however, and some compounds appear to be open to argument on this point, i.e., *el hueleflor* or *el quitamiedos*. All compounds are subject to plural formation according to the usual rules of Spanish, as follows:

los salvavidas	'the lifeguards (or preservers)'
los matamoscas	'the fly swatters'
los guardajoyas	'the jewel cases'
los espantapájaros	'the scarecrows'
los rascaespaldas	'the back scratchers'
los quitasoles	'the sunshades'
los matafuegos	'the fire extinguishers'
los guardametas	'the goalies'.

The compound nouns of category (1b) [Adj + Noun]$_N$ are less common. Since adjectives in Spanish ordinarily follow the nouns they describe (and also agree with them in person and number), a reversed order usually indicates a specialized meaning. In the examples below, the alternative feminine suffix is shown in parentheses wherever it is applicable.

Adjective:		Noun:		Compound:	
alto(a)	'high, loud'	*voz (voces)*	'voice'	*altavoz (-voces)*	'loudspeaker'
salvo(a)	'safe'	*conducto(s)*	'channel'	*salvoconducto(s)*	'safe-conduct pass'
blanco(a)	'white'	*nieve(s)*	'snow'	*Blancanieves*	'Snow-White'

Compare these with *en voz alta*, 'aloud' and *nieves blancas*, 'white snows'. *El salvoconducto* is the particular document required to ensure safe passage through a restricted area.

Compound nouns in category (1c) [Prep + Noun]$_N$ take their gender from that of their constituent noun and otherwise fit into the same general pattern so far discussed with regard to their structure. The noun is the object of the preposition.

Preposition:		Noun:		Compound:	
ante	'before'	*brazo(s)*	'arm'	*antebrazo(s)*	'forearm'
"		*ojo(s)*	'eye'	*anteojo(s)*	'spyglass'
				anteojos	'eyeglasses'
para	'for'	*agua(s)*	'water'	*paraguas*[2]	'umbrella'
"	'for the purpose of'	*caída(s)*	'fall'	*paracaídas*	'parachute'
"		*brisa(s)*	'breeze'	*parabrisas*	'windshield'
"		*rayo(s)*	'thunderbolt'	*pararrayos*	'lightning rod'
"		*choque(s)*	'collision'	*parachoques*	'bumper (auto)'
"		*viento(s)*	'wind'	*paravientos*	'windbreak'
sin	'without'	*razón(es)*	'reason'	*sinrazón(es)*	'injustice'
"		*vergüenza(s)*	'shame'	*sinvergüenza(s)*	'scoundrel, rogue'
"		*número(s)*	'number'	*sinnúmero*	'enormous number'
sobre	'over' 'above'	*todo(-)*	'everything'	*sobretodo(s)*	'overcoat'
"	'about'	*precio(s)*	'price'	*sobreprecio(s)*	'surcharge'

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[2] The final vowel of *para* and the initial vowel of *aguas* collapse into one. The same is usually true of *port(a)aviones*, although the orthography does not yet always reflect this.

Compounds formed by combining two nouns, as in category (1d) [Noun + Noun]$_N$, are unusual, as might be expected in a language that does not permit one noun to describe another (as English does: *doghouse, fire insurance, tomato sauce, mousetrap, music box,* etc.). No consistent relationship exists between the nouns in these cases.

Noun:		**Noun:**		**Compound:**	
boca	'mouth'	*calle(s)*	'street'	*bocacalle(s)*	'entrance into street'
madre	'mother'	*selva(s)*	'jungle'	*madreselva(s)*	'honeysuckle'
mito	'myth'	*manía(s)*	'obsession'	*mitomanía(s)*	'habitual telling of lies'
hombre	'man'	*rana(s)*	'frog'	*hombre-rana* (but *hombres-ranas*)	'frogman'

Spanish adjectives are frequently used as noun equivalents, as in 'the one who is Adj'. Examples are *el flaco*, 'the thin one' (male), *la rubia*, 'the blonde' (female), *los valientes*, 'the brave (ones)', and so on. Compound adjectives, therefore, can be said to contribute to the classes of compound nouns with such constructions as [Adj + Adj]$_{Adj}$ or [Noun + Adj]$_{Adj}$ in which the final (or both) constituents may be noun equivalents. Although these secondary classes of compounds can be derived from them, these constructions are primarily adjectives, and I have listed them as such.

The final category (1e) [Oddities]$_N$ contains three compound nouns created from whole utterances. These are rare occurrences.

Source:		**Compound:**	
¡Enhorabuena!	'Well and good!' 'Thank heavens!' 'At the right time!'	*la enhorabuena*	'congratulations'
¡Haz me reir!	'Make me laugh!'	*el hazmerreir*	'laughingstock'
¿Qué dirán?	'What will they say?'	*el qué dirán*	'gossip' 'public opinion'

Most COMPOUND ADJECTIVES in Spanish are formed in a way which parallels the noun phrase, in which the adjective follows the noun it describes and agrees with it in gender and number. Some examples are:

un durazno maduro	'a ripe peach'
zapatillas nuevas	'new slippers'
los cerros lejanos	'the distant hills'
de oro fino	'of pure gold'
una araña pequeñita	'a tiny spider'
la luna reluciente	'the shining moon'.

Compound adjectives, with a few exceptions, have an adjective as their final element which is then inflected for agreement in the usual way. However, in the list of compound adjectives from category (2a) [Noun + Adj]$_{Adj}$ the expected forms **piernacorto(a)*, **pelorrojo(a)*, **barbaespeso(a)*, and so on do not occur, although they would be phonologically acceptable.

Noun:		**Adjective:**		**Compound:**	
pierna	'leg'	*corto(a)*	'short'	*piernicorto(a)*	'short-legged'
pelo	'hair'	*rojo(a)*	'red'	*pelirrojo(a)*	'red-haired'
barba	'beard'	*espeso(a)*	'heavy, dense'	*barbiespeso(a)*	'heavy-bearded '
cabeza	'head'	*duro(a)*	'hard'	*cabeciduro(a)*[3]	'stubborn' 'pig-headed'
boca	'mouth'	*abierto(a)*	'open'	*boquiabierto(a)*	'open-mouthed'
mano	'hand'	"		*maniabierto(a)*	'generous'
cara	'face'	*acontecido(a)*	'having occurred'	*cariacontecido(a)*	'crestfallen'
ojo	'eye'	*negro(a)*	'black'	*ojinegro(a)*	'black-eyed'
punta	'point'	*agudo(a)*	'sharp'	*puntiagudo(a)*	'sharp-pointed'
pata	'paw, leg' (of animal)	*zambo(a)*	'knock-kneed'	*patizambo(a)*	'bandy-legged'
"		*tuerto(a)*	'twisted'	*patituerto(a)*	'crooked-legged'

If these compounds are perceived as noun phrases by native speakers, then an internal gender conflict would arise whenever the compound adjective differed in gender from its noun constituent, as in the following examples:

*un hombre *piernacorto*	'a short-legged man'
*una muchacha *pelorroja*	'a red-haired girl'
*un palo *puntagudo*	'a sharp-pointed stick'.

This conflict can be resolved by "neutralizing" the gender of the constituent noun in order to permit the resulting compound adjective to be inflected for either gender, as follows:

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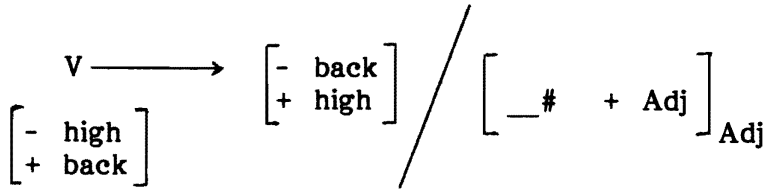
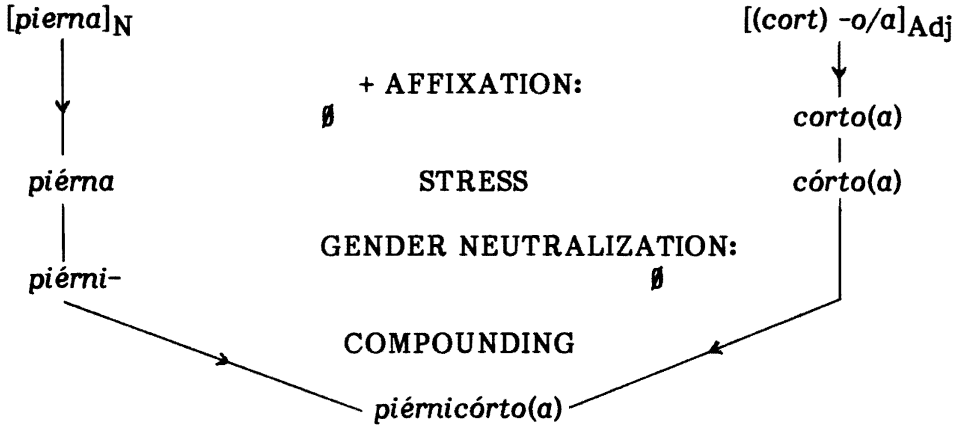
[3] Orthographical spelling conventions, not phonological changes, are shown in *cabeciduro(a)* and *boquiabierto(a)*: *z* → c and c → *qu* before *e* and *i*.

Gender Neutralization Rule:



A sample derivation is shown for *piernicorto(a)*, 'short-legged'.



It seems probable that Gender Neutralization would take place immediately before Compounding; otherwise no internal gender conflict would arise in half the cases and would result in pairs of compound adjectives such as *piernicorto/*piernacorta*, **pelorrojo/pelirroja*, *puntiagudo/*puntaguda*, etc.

The compound adjectives of category (2b) $[Adj + Adj]_{Adj}$ can be divided into two classes. In the first class, the adjectives are of equal value and their coordinate structure is clearly shown in the incorporation of *y* ([i]), 'and', into the compounding process. Gender Neutralization (applied to the first example) and vowel assimilation rules yield the compound adjectives in the list below:

Compound Adjectives of Equal Value: 'Adj_1 and Adj_2'

Adjective and Adjective:					**Compound:**	
agrio(a)	'sour'	*y*	*dulce*	'sweet'	*agridulce*	'bittersweet'
verde	'green'	*y*	*negro(a)*	'black'	*verdinegro(a)*	'very dark green'
"		*y*	*blanco(a)*	'white'	*verdiblanco(a)*	'green and white'
"		*y*	*rojo(a)*	'red'	*verdirrojo(a)*	'green and red'
rojo(a)	'red'	*y*	*blanco(a)*	'white'	*rojiblanco(a)*	'red and white'

Compound Adjectives of Unequal Value: 'Adj$_1$ that is Adj$_2$'

Adjective and Adjective:				**Compound:**	
azul	'blue'	*claro(a)*	'light'	*azul claro*	'light blue'
"		*marino(a)*	'navy'	*azul marino*	'navy blue'
verde	'green'	*oscuro(a)*	'dark'	*verde oscuro*	'dark green'
rosa	'pink'	*pálido(a)*	'pale'	*rosa pálido*	'pale pink'

However, the second class of adjectives in this category contains adjectives that are not equal in value; in these compounds, the second constituent describes the first in the same way that the compound as a whole describes the noun and occupies the same relative position with respect to it in the phrase. Moreover, they function as invariable units, i.e., they are not subject to agreement inflection, as in the following examples (Mason: 1967):

ojos azul claro	'light blue eyes'
una gorra verde oscuro	'a dark green cap'
una falda azul marino	'a navy blue skirt'
sábanas rosa pálido	'pale pink sheets'.

The compound adjectives of category (2c) [Adj + Noun]$_{Adj}$ are also invariable, as might be expected, since the final constituents are nouns that are not inflected for gender.

Adjective:		**Noun:**		**Compound:**	
verde	'green'	*mar*	'sea'	*verdemar*	'sea-green'
"		*oliva*	'olive' (fruit)	*verde-oliva*	'olive-green'

One unusual case that seems to defy the foregoing discussion involves derivatives of the adjectives *sordo(a)*, 'deaf' and *mudo(a)*, 'mute, dumb'. Noun equivalents are formed in the customary way, as follows:

el sordo (masc.) 'the deaf one'	*el mudo* (masc.) 'the mute (one)'
la sorda (fem.)	*la muda* (fem.),

but the resulting compound forms are:

sordomudo(a)	'deaf-and-dumb'
el/la sordomudo(a)	'the deaf-mute'.

COMPOUND VERBS constructed from free forms in Spanish all have a verb as the second constituent, and the majority fall into category (3a) [Prep + Verb]$_V$. In these cases, the object of the preposition is missing from the verb phrase: 'to Verb$_{Inf}$ [Prep + ∅]$_{PP}$'. Some examples are:

Preposition:		Verb:		Compound:	
ante	before	*pagar*	'pay'	*antepagar*	'prepay'
entre	'between' 'among'	*chocar*	'crash'	*entrechocar*	'collide'
"		*cruzar*	'cross'	*entrecruzar*	'interweave'
sobre	'on', 'over' 'above'	*cargar*	'load'	*sobrecargar*	'overload'
"		*ponerse* (refl.)	'place' (oneself)	*sobreponerse*	'overcome'
"		*vivir*	'live'	*sobrevivir*	'survive'
"		*pasar*	'pass'	*sobrepasar*	'excel'
"		*salir*	'go forth' 'go out'	*sobresalir*	'stand out' 'surpass'
tras	'behind'	*plantar*	'plant'	*trasplantar*	'transplant'
"		*tornar*	'turn'	*trastornar*	'upset, turn upside down'

Adjectives are often used as adverbs in Spanish, and although the first constituents in the category (3b) [Adj + Verb]$_V$ are true adjectives inflected for agreement and having comparative and superlative forms, it is in their adverbial role that they combine with verbs to form compounds; this is hardly surprising, since verbs are commonly described by adverbs. Both *bueno(a)*, 'good' and *malo(a)*, 'bad' are irregular and show stem vowel change and/or loss of suffix when used adverbially (*bien*, 'well' and *mal*, 'badly').

Adjective:		Verb:		Compound:	
bueno(a)	'good'	*decir*	'say'	*bendecir*	'bless'
malo(a)	'bad'	*decir*		*maldecir*	'curse'
"		*criar*	'rear'	*malcriar*	'spoil'
"		*parir*	'give birth'	*malparir*	'miscarry'
"		*tratar*	'treat'	*maltratar*	'mistreat'
menos	'less'	*preciar*	'value'	*menospreciar*	'scorn, despise'

Finally, there is one compound verb in category (3c) [Oddities]$_V$, which I have included because of its similarity to the compound nouns in the corresponding category. It is not constructed entirely of free forms; it is a complete utterance with an infinitival suffix:

¡Por Dios! 'Heavens!' 'For God's sake!' + *-ear* *pordiosear* 'to beg'

A corresponding noun equivalent exists as well which combines the utterance with a nominalizing suffix: *pordiosera(o)*, 'beggar'. Presumably this would create an entry for an "Oddities" category for compound adjectives.

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Examination of compounds constructed of free forms in Spanish provides evidence that they are perceived as phrasal by the native speaker of the language. In the case of compound nouns, the plurality of constituents is generally determined in accordance with the corresponding phrase. In compound adjectives, gender conflict between constituents must be resolved. Certainly compounds constructed from whole utterances essentially without alteration, must be considered phrasal. Finally, in all cases discussed, the stress patterns of the individual constituents are everywhere maintained.

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