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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 5, 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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THE FUNCTIONAL STRUCTURE OF SOME NITINAHT CLAUSES

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1. INTRODUCTION: NITINAHT AS A COMMUNICATIVE SYSTEM[1]

Language is used for a variety of different purposes, but communicating with others is a primary one. Communication is a cooperative enterprise between the speaker and the listener(s), and it proceeds most smoothly when formal rules known to both sides are observed. It has been argued persuasively (Givon 1979) that syntactic rules developed from more pragmatic modes of communication, such as discourse strategies, because both the expression and processing of utterances became more efficient when structural devices were imposed and guidelines for interpreting them were recognised.

The specific rules adopted by individual languages vary, but two general approaches are common, one based on word order, the other on the case-marking of nouns. In a language with rigid word order, the linear arrangement of words or elements alone can indicate their syntactic role. In English the order noun-verb-noun in the main clause correlates very highly with the

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[1] The transcription system used is the one laid out in Thomas and Hess (1982), with some minor modifications. The glottal is shown by ʔ when associated with vowels, by ' when associated with consonants. The pharyngeal is shown by ʕ The lateral affricate is shown by ƛ. Vowel length is shown by · (uˑ). Components within a syncretic morpheme are linked by +.

The following abbreviations are used for grammatical morphemes:

ABS - absolutive	MOM - momentaneous
CAUS - causative	OBJ - object
CLASS - classifier	PERF - perfective
CONT - continuative	Q - interrogative
DEF - definite	REF - referential
DUR - durative	S - singular
IND - indicative	
LOC - locative	

First, second, and third person references are denoted by 1, 2 and 3, and are in the singular unless otherwise stated.

grammatical roles of subject-verb-object. Chomsky (1965) relied on this fact when he defined a subject exclusively in terms of linear arrangement, as the NP of S.

Meanwhile, languages in which the word order is comparatively free often exhibit a sophisticated system of case-marking on the nouns; two examples are Serbo-Croat and Turkish.

Studies have been carried out showing how native speakers develop processing strategies that take into account these different language-specific characteristics (Bever 1979; Schieffelin 1981; Slobin 1973, 1982).

By comparison, the Nitinaht clause is distinguished by the relative flexibility of its word order and the paucity of its case-marking system. Whereas both these methods contribute something to disambiguating the clause, neither completely explains it.

Flexibility is a well-known feature of Wakashan syntax. Swadesh (1939: 78) said of Nootka, another Wakashan language: "Normal words do not fall into classes such as noun, verb, adjective, preposition, but all sorts of ideas find their expression in the same general type of word, which is predicative or non-predicative according to its paradigmatic ending." In effect, roots are not marked for grammatical category, but by adding the appropriate affixes they can take on a nominal or verbal function.

A definite or deictic suffix is associated with nominal phrases and may occur on nouns or adjectives, while suffixes for mood, person and aspect denote a verbal function. For example,[2] the root sus- 'swimming' may be found in the forms: susa·ʔa 'he is swimming', or susa·bt̓aq 'the one who was swimming'. In this system the grammatical role is principally identified by the co-

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[2] The Nitinaht language belongs to the Wakashan family and is spoken on the west coast of Vancouver Island. Elicitation was carried out under the auspices of Linguistics 500: Field Studies between September and February, 1984-85. The consultant was Mrs. Flora Joseph. The course supervisor was Dr. T. Hess. All the examples cited (unless otherwise identified) and the observations made on them are based on the data collected during the course. It should be stressed that the aim in this study was to examine the different types of utterances recorded in an attempt to elucidate the strategies that were employed in producing them. The comments that are made should be taken as applying within the context of conversational speech and not to continuous texts where different conditions may obtain. The scope of the inquiry is limited to surface production and does not discuss the development of morphemes from underlying forms.

occurrence of unbound affixes and this enables stems to function in different capacities.

Jacobsen (1979: 106-107) argues, however, that distinctions are observed between the roots of different word classes. He points out that whereas all major words may occur as predicates, there are gaps in the inflectional possibilities available to some classes, especially when these occur as arguments (i.e. independent words or adjuncts) and not as predicates. For example, words which belong to the noun class may occur without identifying suffixes in the role of subject or object while words in a class of verbs may only occur in these roles in a nominalized form, for example when followed by a definite suffix.

The predicate is generally towards the beginning of the sentence, in first or second position;[3] the order of the remaining words in the sentence is not rigid but may vary. Much of the important grammatical information is contained within the predicate, and here there are definite constraints governing the order of morphemes. The predicate is composed of a stem, in initial position, which may or may not be followed by other suffixes, and the predicating elements, the mood and person markers, are in word-final position (Klokeid 1978).

In regular, declarative, indicative sentences the predicating elements of mood and person are often combined into a single morpheme, though some segmentation is possible. The stems to which these inflections can be attached may fulfil a number of different functions; they include the semantic verbal component, descriptive and deictic terms, entities, quantifiers and conjunctions. Most items that carry an important part of the communicative message can function as predicative stems, while lesser elements such as particles never do (Swadesh 1939). Other morphemes can occur in a fixed order between the stem and mood/person inflections and contribute additional lexical material or grammatical information on causation, aspect, etc. If the predicate stem is not formed around a major concrete constituent, it typically begins with a root that indicates only the general nature of the following statement, for example that it is referential or locative.

Pronoun subjects and objects are shown by predicate-final inflections, except for third person object pronouns, which are not marked.[4] If the subject and object of the sentence are not

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[3] Other elements can precede the predicate, for example particles that act as interjections. One such utterance collected was: su, ʔuʔubxaʔχ̓a 'now, that's enough'. It is also possible for adjunct subjects to precede the predicate, but no examples of this construction were collected.

[4] For a full discussion of the subject-object suffix combinations in the indicative, see Carlson and Thomas (1979).

pronouns but formed by independent, non-predicative words, the subject generally follows the predicate and precedes the object unless there are special considerations. Nitinaht can, therefore, be classed as a VSO language.

The case-marking of participants is minimal. The predicate generally shows agreement with the subject in person and number. An agent-patient relationship may be overtly marked by a causative morpheme, signalling that the object has been affected by an agent-controlled action. At other times the object may be accompanied by a component that designates it as such, ʔu·yuqʷ, cf. (26) '(the boy chased) the dog away', ...ʔu·-yuqʷ čiˑkʷaʔɬ-aq. Similarly, locative phrases may be flagged as such by a preceding locative morpheme, ʔiyaǎ: ʔiyaǎ-aʔtaǎ-s ʔaǎkiʔ (LOC-band+member-IND+1 this) 'I live right here', i.e. 'I am a member of this band'.

Elsewhere, simple locative statements are expressed by means of transitive verbs, and no overt grammatical distinction is made between the entity being located and its location.

When references are known from an earlier context, for example, when a thematic subject or object is being discussed, there is a preference for encoding these references by pronoun markers or leaving them unexpressed. Nitinaht, therefore, relies heavily on anaphora and ellipsis. This tendency, coupled with the paucity of devices for marking participant roles, might be expected to lead to ambiguity. It is assumed that listeners will draw upon their knowledge of the world and the probable semantic relationships involved to make sense of the utterance, when the shape of the sentence itself does not do so.

In discussing the shape of the sentence in Nitinaht (and the forces that control it), I have tried to choose a framework that is suitable for this particular language and not one transposed from another system. For example, virtually all types of predicative structures in English can be described in terms of a subject and predicate (Lyons 1977: 469), and, as these components are usually grouped together in a neat configuration, the English sentence lends itself easily to a bipartite analysis along these lines. Hukari (n.d.) draws attention to the difficulty of imposing structural definitions of subject and object upon a west coast Indian language such as Halkomelem, where the VSO word order precludes the verb and its object being regarded as a structural unit in a two-dimensional tree, and he suggests that the solution may lie in finding other definitions for such categories. He later analyses the subject of a sentence in Halkomelem in terms of its thematic role (Hukari n.d., Chapter 3: 3; 9). A similar difficulty arises in Nitinaht which is also a VSO language and where the grammatical categories of subject and object do not appear to be given clear and consistent expression in the surface structure. Structural patterns in Nitinaht clauses are dominated by the stem that forms the predicate and it may belong to one of several constituent classes. To accommodate these factors, the analysis has been based on the valency of the

predicate, i.e. the number of arguments that the predicate, or operator takes. Thus, an intransitive sentence has a monovalent, or one-place operator (the subject), a transitive sentence is bivalent, the two arguments being the subject and object, and so forth.

2. AFFIXATION

The morphological system is extremely important as Nitinaht uses affixes to convey both lexical and grammatical information. A very brief outline follows, to show how the system works.

There are no prefixes in Nitinaht, but there is sometimes reduplication of the initial stem element (for example to show repetition). A few infixes are also observed, but the overwhelming majority of affixes are suffixes which are attached to a root or stem in a particular order. Suffixes are applied to actions to mark agent control and aspect; aspect is discriminated with precision - the categories include momentaneous, inceptive, continuative, and perfective, among others. Entities may also carry suffixes, notably to show definiteness and possession.

Other grammatical information is contained in inflectional suffixes which follow non-inflectional ones and give details on tense, person, number, voice and other features.[4] Some of these categories have developed into a sophisticated sub-system. Carlson (n.d.) lists the following modal distinctions: indicative, interrogative, inferential, quotative, conditional, counterfactual, and imperative.

One of the most distinctive characteristics of Wakashan languages is their "lexemic" suffixes, i.e. suffixes which have a lexical input. These suffixes were divided into two classes by Swadesh (1939) who called them restrictive and governing suffixes. Restrictive suffixes modify the meaning of the preceding stem by adding greater precision. For example, physical activity is almost always linked to the type of surface on which it occurs, contrasting (1) ʔaƛ-aʔs-a 'two people are sitting on the ground outside' with (2) ʔaƛ-iʔs-a 'two people are sitting on the beach'. The location must be specified for the utterance to be completed. Similarly, references to objects often include classifying suffixes which describe size or shape: bu·-ṗeẏɬ ɬicɬib (four-CLASS mat) 'four (longer-than-wide) mats'.

Governing suffixes were defined by Swadesh (1939: 84) as suffixes which, when added to a predicate stem, become "the semantic nucleus of the resultant theme". He gave as examples in

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[4] For a full discussion of the subject-object suffix combinations in the indicative, see Carlson and Thomas (1979).

Nootka: *child+have*, 'I have a child' and *herring+eat*, 'I am eating herring.'[5]

Examples of governing suffixes in Nitinaht clauses are discussed below.

3. DECLARATIVE CLAUSES

This report is limited to examining the structure of some indicative, affirmative, declarative clauses, as it is assumed that this type of utterance represents the simplest, least marked form of construction that will best illuminate the basic strategies employed in sentence formation. Perhaps the most interesting contrast in the Nitinaht clause is that between what is fixed, rule-governed and subject to constraint and what is optional, variable and open to choice. The position of the predicate and the order of the morphemes composing it follow regular patterns but the class of its initial constituent is one of the variables. Some of the options available to the Nitinaht speaker in forming a predicate and the factors that may influence his choice are discussed below.

It was found that predicate stems fall into two major classes: (a) those that introduce simple, concrete statements of various kinds, in which the initial element performs a specific function, and (b) the remainder which present less concrete relationships, dealing with abstract or complex situations; these are introduced by a stem that has minimal semantic or syntactic implications.

The content of the utterance, then, appears to influence both the shape of the clause and the choice of the predicate stem. It is in order to take this fact into account, i.e. that the information in the message has a bearing on its form of expression, that a purely formal syntactic analysis has been discarded in favour of one that is based on the communicative function of the clause.

The idea of dividing up a sentence according to the value of the information contributed by each element was broached by members of the Prague School of Linguistics, and they called this operation functional sentence perspective. Linguists such as Halliday (1970) and Lyons (1977) later adopted these ideas and developed them in relation to English. Firbas (1972) pointed out that communication is not a static but a dynamic property and that each constituent can be assessed according to a rising scale of communicative dynamism because the extent to which each constituent advances communication is reflected by its position

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[5] t̓aʔanak-aḥ 'I have a child'; ƛoẏi·saḥ 'I am eating herring' (Swadesh 1939: 85).

in the sentence. The old information is retrievable from context and therefore has the lowest degree of communicative dynamism. It is called the theme (or topic) and is usually represented by the subject which, in English, typically precedes the predicate. The new, essential information is context-independent and so it has the highest degree of communicative dynamism; it is the rheme (or focus) and is generally found in the predicate in English. In North America the terms topic and focus (or comment) are preferred and more or less correspond to the notions of theme and rheme, respectively.

This discussion examines the structure of Nitinaht clauses in relation to the function of the initial predicate stem component and the type and number of arguments the predicate takes.

4. DESCRIPTIVE CLAUSES

In simple descriptive statements, an entity is credited with a property or attribute. Both the nominal and adjectival component are treated as attributives. This ascriptive element forms the predicate stem and suffixes for person and mood are added to it.

(1) dašuk"-s (strong-IND+1) 'I am strong'

(2) ha·č-ʔa ʔaǎkiʔ salaǎa·ɬ (long-IND+3 this bulrush) 'this is a long piece of bulrush'

(3) hapu·ɬ-as (beard-IND+2) 'you have a beard'

(4) hapaqsɬ-a ya· qu·ʔs-aq (mustache-IND+3 here man-DEF) 'the Indian has a mustache'

These statements follow the same pattern. The ascriptive element which conveys the key information and carries the highest degree of communicative dynamism is in the predicate in initial position and the verbal inflections are affixed to it. The subject of attribution is coded by a pronoun contained in the ending in (1) and (3) and by an independent word following the predicate and a deictic element in (2) and (4). The most salient position appears to be at the beginning of the sentence, and it is occupied by the rheme or focus. The theme or topic typically occurs later, either at the end of the predicate if it is coded by a pronoun, or after the predicate if it is represented by an independent word.

If an unequivocal relationship can be understood from a knowledge of the entities involved, the utterance may consist only of a justaposition of these two components plus the necessary verbal inflections without giving more detailed coding. This appears to be the strategy followed in (3) and (4).

5. DEIXIS

Two types of deictic constructions were observed in this corpus, but only one of the stems, ya·ɬ, was observed as a predicate.

(5) ya·ɬ-a?λ-'a (here-now-IND+3) 'here he comes'

(6) ya·?-as-a (here-ground-IND+3) 'it's right here, on the ground'

Also:

(7) ?u-x̌ʷ-a ya· k̓up-a· (REF-ABS-IND+3 here guess-CONT) 'he is guessing'

See also (4).

Another deictic expression, ?ax̌ki? 'this', did not appear as a predicate stem in this corpus:

(8) p̓a-čiλ-s-icx̌ ?ax̌ki? (gift-PERF-IND+1-2+OBJ) 'this is my gift to you'

(9) hitx̌aẃi·ɬib-a·k-s ?ax̌ki? (daughter-POSS-IND+1 this) 'this is my daughter'

See also (2).

Further elicitation is needed to confirm this preliminary finding. If the distinction is, indeed, real, the two constructions may be derived from different sources, with ya·ɬ, which has locative connotations referring to ostensive definition, while ?ax̌ki? 'this' signals definiteness + proximity, similar to the contrast observed in other languages. The deictic locative was employed as the predicate stem only in the simplest sequences. In longer utterances or when there was a shift in emphasis it was placed after the predicate, in what appears to be a less prominent position.

6. ACTION CLAUSES

The simplest situation consists of an actor performing an activity. When the subject is the only argument of the predicate, the sentence is intransitive. When the action affects another entity, the sentence is transitive. Additional coding devices are employed, where necessary, to clarify the relationships between entities. In particular, Nitinaht makes a fundamental distinction between activities that have a perceptible impact upon another object, especially where it leads to a second event, and those that do not. The effect of action directed upon an object tends to be marked in some way, while

transitivity per se, the simple presence of another participant, need not be. The actor or agent (the grammatical subject) is not marked unless there is a need for special focus. (For a discussion of transitivity and participant roles, see Halliday 1967, Cruse 1973, Lyons 1977 and Allerton 1982).

In these clauses, the action is pivotal as it defines the operations and interaction of the participants. The action component, then, forms the predicate stem.

(10) pisat-ḱʷ-a či·ḱʷa·ʔɬ-aq (run-DUR-IND+3 dog-DEF) 'the dog is running'

(11) sus-a·-ʔa čitapḱʷ-aq (swim-CONT-IND+3 whale-DEF) 'the whale is swimming'

(12) sa·s-ƛ-'a pi·špiš-aq (climb-MOM-IND+3 cat-DEF) 'the cat is climbing up'

(13) sa·s-a šučs-aq (climb-IND+3 tree-DEF) 'he has climbed up the tree'

(14) cas-i·ks-a či·ḱʷa·ʔɬ-aq siť-i·ʔt-aq (chase-after-IND+3 dog-DEF tail-POSS-DEF) 'the dog is chasing his tail'

(15) cas-i·ks-a pi·špiš-aq cibicibe·ʔ-aq (chase-after-IND+3 cat-DEF rat-DEF) 'the cat is chasing the rat'

In examples (10-12) the action term in the predicate is monovalent; it has only a single argument representing the performer of the activity. In examples (13-15) the operator is bivalent and there is a second participant, the object. When both the subject and the object are denoted by independent words following the predicate, as here, the normal word order is observed and the subject precedes the object.

If the object is represented by a third person pronominal form it is not overtly marked and, in non-causal situations, must be inferred. For example, (12) can be glossed either as 'the cat is climbing up' or 'the cat is climbing up it'.

In these examples, the central activity is presented as a process that does not terminate in a perceptible change of state. Another type of clause portrays a cause-and-effect relationship in which the action undertaken by the agent directly affects the behaviour of another entity. Typically, this circumstance is coded by a causative morpheme, -aʔp/-aʔb <//-ʔap// that is attached not to the object itself but to either the predicate or the semantic action component if this is an adjunct outside the predicate. When third person objects are not overtly marked, the causative morpheme helps to indicate that the situation arises from the interaction between two participants.

(16) tilq-saʔp-'a (squash-MOM+CAUS-IND+3) 'he squashed it'

(17) ʔamaš-a·ʔp-'a (breast-CAUS-IND+3) 'she is nursing him (her baby)'

(18) ʔapt-a·-s (hide-CONT-IND+1) 'I am hiding'

(19) ʔapt-a·ʔp-s (hide-CAUS-IND+1) 'I am hiding it'

Similarly, when the causative morpheme is added to a description of a static condition, it alters the interpretation, making the situation dynamic by the intervention of an agent.

(20) ʔu-kʷič+o·s-a (REF-in+surface-IND+3) 'it is inside', i.e. in the basket

(21) ʔu-kʷič+o·s-aʔp-s pukʷʔo·-aq (REF-in+surface-CAUS-IND+1 basket-DEF) 'I put it in the basket', i.e., I caused it to be in the basket

(22) ba·q-iʔdaǰ-ik (what-do-Q+2) 'what is the matter with you?'

(23) ba·q-iʔdaǰ-ʔaʔp-ik (what-do-CAUS-Q+2) 'what are you doing to it?'

The causative morpheme is not applied across the board in agent-patient relationships, rather some sharp distinctions are observed, in accordance with the precise nature of the interaction.

(24) bap-aqƛ-iyƛ-'a čí·ḱʷaʔɬ-aq beʔiƛqč-aq (bite-rear-MOM-IND+3 dog-DEF boy-DEF) 'the dog bit the boy's rear'

(25) ba-ʔa·ʔat-p-'a čí·ḱʷaʔɬ-aq beʔiƛqč-aq (bite-down-CAUS-IND+3 dog-DEF boy-DEF) 'the dog bit the boy down', i.e., the dog bit the boy so that he fell out of the tree

In (24) the dog bit the boy but no visible consequences ensued, and the causative morpheme does not appear. In (25) the boy fell down from the tree as a result of being bitten; the causative morpheme is introduced to mark the connection between the two events.

(It has been suggested, in a personal communication by Dr. Carlson, that the causative morpheme may derive in this case from -p rather than -ʔap and act as a transitivizer, preventing a passive interpretation: baʔa·ʔaťa 'he is being bitten down').

Some actions are inherently transitive in that they require two participants to take place. One example is cas- 'chase'; see (14) and (15) above. In such cases, it may not be considered necessary to denote the presence of another participant by the causative or object morpheme. When the motion was not random but directed towards a goal, the causative morpheme again was not employed in this instance; instead the relational term, ʔu·yuqʷ, helped to show the target of the action.

(26) cas-šƛ-'a beʔiƛqċ-aq ʔu·-yuqʷ čiˑḳʷaʔɬ-aq (chase-MOM-IND+3 boy-DEF REF-OBJ dog-DEF) 'the boy chased the dog away'

The stem-suffix combination, ʔu·yuq·ʷ, is a device that is used, as here, to identify the entity against (or towards) which the action (or feeling) is directed. It is especially helpful in clarifying the object status of an argument, when the agent and the object are both represented by independent words. It does not necessarily code a cause-and-effect relationship, and appears to differ in this from the causative morpheme. (A more detailed investigation of precisely how these two constructions differ, while clearly important, cannot be undertaken here.)

When there is a change of emphasis, and the object, not the agent, becomes the topic, a passive suffix, iʔt-, <//ʔit-// indicates the switch.

(27) ƛ̓uƛ̓up-iʔt-aʔp-a haʔuʔb-aq (hang-PASS-CAUS-IND+3 fish-DEF) 'the fish is being hung up (by her)', i.e. the fish was caused (by her) to be hung up.

(Jacobsen (1979: 120) gives examples in Makah of parallel structures for the sentence 'the bear bit the dog', in the active and the passive. The object, 'the dog', is indicated by ʔu·yuq in the active voice. In the passive ʔuyuq drops out and the passive suffix is added to give the corresponding passive reading, in which 'the dog' is seen as the topic.[6]

In summary, in the action clauses examined above, there is little evidence for a broad abstract category of grammatical object. The object is treated in several ways and the distinctions appear to be made according to criteria that suggest they are consistent with certain semantic correlates. The variants include: marking the object that is visibly affected by agentive action, by a causative morpheme; leaving the object unmarked in non-agentive clauses or where the impact of the action is not stressed; and identifying the object status of an argument by ʔu·yuq in cases where this is considered desirable.

7. OTHER CONCRETE RELATIONSHIPS: GOVERNING SUFFIXES

In the examples elicited, governing suffixes were used as operators to establish a relationship between two arguments. The relationships in question did not seem to be perceived as agentive but as belonging to some other simple category, such as

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[6] bačil ʔaƛi·tqʷaɬ q̓idi·liq ʔu·yuq (bite-mom.-ind.-3 bear dog-art. obj.) 'the bear bit the dog'
baciƛ̓it q̓idi·liq ʔaƛi·tqʷalɣit (bite-mom.-pass. dog-art. bear-rel.-pass.) 'the bear bit the dog'

possessive, factitive, etc. Moreover, it is the object involved in the process - the item made, prepared or possessed - that presents the new information and thus carries the most communicative value. This concrete component generally forms the initial element of the predicate while the verbal component that links the two participants involved in the process follows as a suffix with lexical input. The subject in most of the examples is shown by a pronominal marker. The entire proposition is economically condensed into a single word in this way.

(28) ʔadk-adak-s (fire-have-IND+1) 'I have a fire'

(29) qaqad-uʔk-ƛ-s (sliver-have-now-IND+1) 'I have a sliver'

(30) qa·ʔawa-ci·ɬ-s (basket-make-IND+1) 'I am making a basket'

If the emphasis shifts from the target item to, say, a particular aspect of the process, this is reflected by a rearrangement of the component morphemes.

(31) ha·ẇil-čʔa-x̌kʷ-s qaʔawc (finish-make-MOM+PERF-IND+1) 'I have finished making the basket'

The important information is that the task has been completed, and this morpheme is placed in the most salient position, introducing the predicate stem. The product, the basket, is represented by a independant word and it is now moved out of the predicate to another position later in the clause, after the subject.

Other concrete relationships that were expressed by means of governing suffixes were the following.

(32) x̌ubis-x̌tiʔd-a x̌aʔ (cedar-made+of-IND+3 this) 'this (stake) is made of cedar'

(33) mitu·l-aʔtax̌-s (Victoria-member-IND+1) 'I live in Victoria', i.e., I am a member of the Victoria band

The above examples show that there is a keen awareness of the communicative dynamism of the different components in an utterance which is reflected by the form in which it is expressed. The item that offers the greatest advance in communication is preferred as the nucleus or initial component of the predicate. As this component tends to vary from clause to clause, so, too, does the composition of the predicate stem. The content of the message, then, appears to have a decisive influence on the framing of short, simple utterances.

8. OTHER FACTORS AFFECTING CLAUSE STRUCTURE

The different types of clause listed above are notably short and present a concrete situation. Each type serves a distinctive communicative function and is expressed in what is assumed to be a canonical form of utterance. A consistent structural pattern can be discerned, in which the element that is contextually independent and introduces fresh or key information composes the predicate stem. Thus, in clauses devoted to these kinds of statements, the deictic, ascriptive and action components form the predicate and occupy what seems to be the most salient sentence position by virtue of the information they contribute. Similarly, it is customary in Nitinaht for the predicate to begin with a negative morpheme in negative clauses and an interrogative morpheme in informational questions, as shown by the following examples.

Negative: wa-sad-s ((NEG-want-IND+1) 'I don't want to'
Interrogative: baq-kʷi·ɬ-i· (what do-Q+3) 'what is he doing?'

An impersonal statement can be made simply by adding the mood and third person singular markers to a suitable root: wi·qse·-ʔa (wind-IND+3) 'it is windy'.

However, when a single, well-defined component does not provide the focus, an alternative method of construction may be employed. The clauses examined above were limited to a predicate and not more than two arguments and, like other Wakashan languages Nitinaht appears to favour simple clauses with a limited number of nominal arguments (Jakobsen 1979; see below). This development is perhaps to be expected in a language that has minimal case-marking, no precise equivalent of prepositions and loose word order. For example, Russian marks the functions of certain secondary participants by case inflections alone, among them the possessive, benefactive and instrumental roles. English can introduce any number of extra notions by deploying specialized prepositions: *he cut the bread on the table with a knife for his daughter*, etc. Nitinaht expresses these ideas by morphological and syntactic means.

Creider (1979) made the following comments on the relationship between topic and focus (or theme and rheme) in relation to syntactic order among specific language groups.

> Languages that treat initial position as topical and final position as focusing are SVO (English, Spanish, Czech, Russian). Languages that treat initial position as topical and preverbal position as focusing are verb-final (Hungarian, Quechua). Finally, languages that treat initial position as focusing and final position as topical are verb-initial (Nandi, Tagalog, Malagasy). These latter languages always have a means of reversing this order to produce sentences that have initial

> topics. This reversed order is found in discourse contexts where the topic is not known or predictable from the preceding context. (1979: 19)

Nitinaht may perhaps be classed as belonging to the group that treats initial position as the focus, and it also has a strategy for changing this order if a different sequence is considered advisable. It does not completely fit Creider's analysis, however, because the topical position, usually reserved for the subject, is not final but intermediate, following the focus, i.e. either at the end of the predicate or directly after it. The position for secondary focussing appears to be after the subject, near or at the end of the sentence. When the important new information cannot easily be contained in a single, discrete, hierarchically dominant unit, such as is suitable for forming a predicate stem, then it is placed lower in the clause, after the predicate word.

If this is the case, an alternative method of sentence construction is invoked that takes these circumstances into account. The predicate is introduced by a root that is applicable to a wide range of situations; two of the commonest are ʔu- and hit-, which indicate only that the following statements deal with a referential subject or location, respectively. A large number of Nitinaht clauses that do not fit readily into a narrow, task-specific category appear to start in this way. Apart from announcing the general nature of the following statement, these types of roots have limited linguistic scope. They cannot stand as independent words, nor can they be followed directly by mood and person inflections but they must be combined with a suffix. Insofar as these roots represent a convenient device for opening the sentence with scant lexical input, they have been compared to place-holders (such as the English *it* in *it is raining*); see Swadesh and Swadesh (1933).

9. REFERENTIAL AND LOCATIVE STATEMENTS

The stem ʔu- can introduce any referential statement, that is, one in which there is a reference to a specific entity later in the sentence. It is commonly applied in discussing non-concrete relationships, for example when identity is being established.

(34) ʔu-x̌ʷ-s Flora (REF-ABS-IND+1 Flora) 'I am Flora'

(35) ʔu-kʷaqɬ-a x̌aʔ qiceẏk (REF-call-IND+3 that pencil) 'that is called a pencil'

The stem ʔu- also has a number of other usages. It provides a convenient way of rearranging elements when a shift in focus is considered desirable for some reason. The displaced stem is

moved to the end of the sentence.[7]

(36) pičip-x̌ti?d-a (cedarbark-made+of-IND+3) 'it is made of cedar-bark'

(37) ?u-x̌ʷti?d-a x̌a? pičip (REF-made+of-IND+3 this cedarbark) 'this is made of cedar-bark'

Locative descriptions are handled in various ways according to the nature of the statement being made. Statements that are considered relational may be introduced either by ?u- or by hit-; hit- can only refer to statements of location and has, therefore, a narrower application than ?u-. (See Thomas and Hess 1982: 59 for a more detailed discussion.)

Locatives that are handled in English by prepositions such as *in, on,* are treated as relationships having two participants, or arguments, - the referent (X) and the location (Y). The element specifying the precise locative relationship, e.g. 'in, on' is expressed as a suffix following the stem.

(38) hita-č̓+o·s-a (LOC-in+surface-IND+3) 'it is inside (something)'

(39) ?u-kʷič̓+o·s-a (REF-in+surface-IND+3) 'it is inside (something)'

(The surface morpheme indicates that the item is not set directly on the ground. The locative suffixes derive from -č̓u·s 'in or on a surface', in (38), and -či/kʷi 'at, in' + -č̓u·s- in (39).)

In sentences where the arguments are not represented by independent words the person marker agrees with the referent, and this is perhaps to be expected as there are many terms for places which can be expressed as suffixes, e.g. '(on) the beach', '(on) the ground' and '(in) the canoe': hit-qs-a?x̌̓-a (LOC-canoe-now-IND+3) 'he is now in the canoe'.

If both the referent and the place are represented by independent words following the predicate their relative order is

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[7] The question of which pattern to use in a particular case is not always clear and may depend on a number of factors, of which discourse strategy is one. For example, Jacobsen (1979: 108) states that, in Makah, a related language, the pattern with ?u- would be used in answering a question such as 'What do you have?', and the stem formed from an NP in offering unsolicited information. This observation may not always apply in NItinaht. The question, 'What is the stake made of?' (baq-x̌tid-i· kałeẏk-aq) brought the response x̌ubis-x̌ti?d-a ('cedar-made+of-IND+3) rather than a formulation such as ?u-x̌ti?d-a ... (REF-made+of-IND+3 ...).

interchangeable, and neither appears to be considered functionally more important in the relationship, as reflected by hierarchic ordering; that is, the sequence can be STEM-in---MOOD+PERSON X Y, or STEM-in---MOOD+PERSON Y X. (Again, it is assumed that the semantic relationship will be grasped intuitively; a smaller object will be inside a larger one, and so on.)

(40) ʔu·-kʷ-ks-aṗ-e·s-a puḵʷo·ʔ-aq hu·mhu·ṁ-aq (REF-DUR-on-up-surface-IND+3 basket-DEF shell-DEF) 'the shell is on the basket (above the floor)'

(41) ʔu-·kʷ-ks-aṗ-e·s-a hu·mhu·ṁ-aq puḵʷo·ʔ-aq (REF-DUR-on-up-surface-IND+3 shell-DEF basket-DEF) 'the shell is on the basket'

10. EXTENDED CLAUSES

The referential stem, ʔu-, can also be seen in the following sentences.

(42) ʔu·-si·ɬ-a xa·daʔḵ-aq buti·yu biʔat (REF-prepare-IND+3 woman-DEF cutup sockeye) 'the woman is boiling cut-up sockeye'

(43) ʔu-qʷo·ʔaɬ-s qakaċ-qabɬ bucubux̌ʷ ʔiyax̌-x̌ hida·-qaƛs-aq (REF-see-IND+1 three-CLASS bear LOC-ABS LOC-wood-DEF) 'I saw three bears in the woods'

(44) ʔu-kʷč-a·-ʔa bucubux̌ʷ-aqi·ċ-aq x̌ix̌-aq (REF-wear-CONT-IND+3 bear-POSS-DEF skin-DEF) 'he is wearing a bear-skin'

What is common to these utterances is some form of complexity. Nos. (42) and (43) both introduce several arguments and present difficulties in shaping the sentence around a single dominant component. In (44) the proposition is a simple one containing only two arguments, and here the article worn, *bearskin*, is the focus. It takes, however, a linguistically complex form, being composed of two words and five morphemes in all; again, this complicates the problem of placing a single pivotal stem in the predicate. In these conditions ʔu- becomes the predicate stem and the important, new information is positioned later in the sentence.

As the clause expands, there is a tendency not to add extra information by tacking it on to the original structure, as in the case of the English prepositions, cited above. The preference is to limit the number of arguments a predicate controls. When additional arguments are added to the proposition, one method of doing so is by inserting accompanying semantic verbal components to handle them, and this may entail rearranging the entire sequence of morphemes. In this way the clause may be reorganised around a new predicate stem, while the initial stem loses its predicating role and is moved to a position later in the clause.

(45) siqida·k-'a xa·da?ƛ̓-aq (cook-IND+3 woman-DEF) 'the woman is cooking'

(46) ?u-·caǎa?d-a yadaqk-ƛ̓ʷ-aq siqida·k (REF-for-IND+3 child-POSS-DEF cook) 'she is cooking a meal for her child'

(47) diƛ̓-ǎ-a?p-'a (stir-ABS-CAUS-IND+3) 'she is stirring it'

(48) spu·na-ǎaẘa·ɬ-a diƛ̓-ǎ-a?b (spoon-use-IND+3 stir-ABS-CAUS) 'she is stirring it with a spoon, i.e., she is using a spoon to stir it

This feature of Wakashan languages was commented on by Jacobsen. He draws attention to the fact that there is reluctance in Makah to admit more than one nominal argument per clause and that clauses usually consist of just verb-subject or verb-object. He also argues that the function of ?u·yuqʷ is to create a separate prepositional clause that expresses the object (1979: 119-120).

11. DISCUSSION

It is evident that the first and most urgent problem that a Nitinaht speaker faces is the selection of a predicate stem. In making his decision he pays attention to the function of the utterance, and, if it is simple and clear-cut, he shapes the sentence around the most salient item - an attributive in attributive statements, an action component in descriptions of an activity, etc. If the message is semantically or linguistically complex or does not deal with a concrete situation, this method gives way to a more flexible approach to sentence construction in which a root that applies to a wider range of situations forms the initial element of the predicate. Then the new, contextually independent information which constitutes the focus is introduced later in the sentence.

It has been possible to present and discuss only a limited set of sentences in this paper; other important aspects of sentence formation that cannot be mentioned here concern changes in focus, branching sentences and discourse strategy. Nevertheless, the data cited above suggest that the function of the utterance may, under certain conditions, have a decisive influence on the structure of the clause in Nitinaht, that is, that form is related to content.

The implications of this assumption are far-reaching and leave many avenues to be explored. Perhaps the most promising is one which clarifies the judgements a speaker must make in choosing between alternative solutions. For example, an attributive will form the predicate stem in a simple descriptive statement in which it is the focal element, but it does not do so when it operates at a phrasal level and qualifies a local noun.

(49) cas-i·ks-a ʔi·x̌-aq pi·špiš ʔu·-yuqʷ či·ḵʷaʔɬ-aq (chase-after-IND+3 big-DEF cat REF-OBJ dog-DEF) 'the big cat is chasing the dog'

Whereas the procedure here is not hard to follow, it is not always as transparent and it may be influenced by language-specific considerations. An illustration is provided by the numerals and quantifiers, which are regarded as highly salient items and often enter the predicate stem.

(50) šuči-ṗeẏɬ-a ʔax̌aʔ kaceẏḵ-aq (five-CLASS-IND+1 there stick-DEF) 'there are five (long, thin) sticks'

(51) čawa·č-qadaq-šiƛ-s kaceẏk (one-win-MOM-IND+1 stick) 'I have won one stick' (in a game)

(52) qakač-ak-s ƛ̓apat (three-have-IND+1 basket) 'I have three storage-baskets'

(53) ʔu-siẏaḵ-ƛ-s bu·-ṗeẏɬ łicłib (REF-make-MOM-IND+1 four-CLASS mat) 'I have made four mats'

In (50)-(52), the numerals appear to have the most communicative value; they combine easily with the governing suffixes and they form the predicate stem. In (54) the information structure of the message is similar but the numeral has been moved to later in the clause.

Further study is needed to elucidate how these decisions are arrived at before any firm conclusions can be drawn. Nevertheless, it can tentatively be suggested that a set of criteria exists for imposing a hierarchical order in selecting a predicate stem. This hierarchy is derived from the dynamic relationship of the contributing factors: they include the function of the clause and its informational and linguistic content. These considerations regulate the form of the predicate and, with it, the basic shape of the sentence.

An obvious and pressing task for future inquiry is to discover how the order of priorities operates by taking one basic phrase and expanding it in different directions, adding, by turns, an attributive, a numeral, a locative phrase, separately and in combination, and so forth.

Attempting to analyse the Nitinaht language is not an easy task because it appears to offer unorthodox solutions to some fundamental structural problems. An examination of those utterances in this sample which expressed short, simple propositions found that they rarely gave clear indications of being organised in strict, formal patterns according to abstract grammatical categories such as subject and object. Further scrutiny showed that these clauses could readily be sorted into patterns that reflected their functional structure, and this fact raises the possibility that the system appeals to semantic

principles at some level. To accommodate the constant reordering of components that such a system implicitly demands, syntactic units display a notable flexibility both in form and location. The above conclusions are, of course, tentative, being based on a limited sample, and more searching and detailed investigations are needed before any firm conclusions can be drawn. Analysing the structure of the Nitinaht clause is, however, a thought-provoking experience that makes one reexamine many of the axioms of linguistic organisation.

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SOME ANALYSES OF VOWELS BY SOCIAL GROUP IN THE SURVEY OF VANCOUVER ENGLISH*

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1. ACOUSTIC ANALYSIS IN DIALECT STUDY

There are three questions in the study of regional and social dialect that are addressed in this acoustic study of vowels. The first is the question of how individual vowels differ in their production from one social or regional variety to another. The second is whether there is a pattern that relates each social group's set of vowels to each other in a systematic way which can therefore be used to differentiate one group from another. The third is to identify the articulatory characteristics that correspond to each group's acoustic pattern, and to evaluate the acoustic parameters which provide the best indication of articulatory differences.

The data for this acoustic study have been drawn from the Survey of Vancouver English carried out by Gregg, *et al*, (1981) at the University of British Columbia. The subjects are 40 female and 40 male natives of Greater Vancouver. All subjects are anglophones who have grown up in Vancouver. They represent the youngest of the three age divisions in the survey, in the range between 16 and 35 years old. Female and male subjects are divided into four social groups of ten subjects each on the basis of social index scores determined in the original survey using the Blishen and McRoberts (1976) social indexing scale combined

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with other social indicators. Group 1 represents low social index scores, and group 4 represents the highest social index scores.

2. RESEARCH QUESTIONS

1. Are the individual vowels of Vancouver English significantly differentiated across the social groups of the survey?
2. Are long-term average spectra (LTAS) significantly differentiated across the social groups of the Survey of Vancouver English?
3. Do the long-term average spectra reflect patterns of shift from group to group that are represented in the distribution of vowels?
4. Are the first two vowel formants (F1 and F2) comparable acoustic measures to the long-term average spectral representations of the speech of speakers in the survey?
5. Are relationships of vowel clusters across social groups the same for female and male subjects in the survey?
6. What long-term articulatory setting characteristics can be said to describe each of the social groups in the Vancouver survey as suggested by either vowel clustering procedures or LTAS calculations?
7. How do current data and results from the survey help to explain earlier relationships obtained for Vancouver and other English-speaking subjects using vowel clustering and LTAS techniques?
8. Is formant (F1,F2) analysis the most accurate acoustic means of analyzing the relationships between vowel systems of the social groups of a sociolinguistic survey?

3. METHODS OF SPEECH ANALYSIS

To compare vowel clusters across the groups, vocalic nuclei are computed for two tokens of each of ten vowel phonemes for each speaker in the survey, from identical text in reading style. Initial measurements of vowel formants are made using the ILS package on the PDP-11 minicomputer. Subsequent measurements are made using the Micro Speech Lab package developed in the Centre for Speech Technology Research at the University of Victoria on the IBM-PC microcomputer. In the ILS procedure, formant peaks, bandwidths and amplitudes are calculated and printed for each vowel token. The mean first and second formant frequencies are then calculated from the information on the print-out and filed by group for statistical processing. Two speakers from each group were excluded because of poor quality or local interference during recording, leaving eight subjects in each cell with acceptable measurable vocalic nuclei, 32 females and 32 males. The same 64 speakers are therefore included in the LTAS calculations. At the present stage of research, all female and

male vowel formant determinations have been made, and LTAS calculations for the female subjects have been completed.

For long-time spectral analysis, a sample of 45 seconds of continuous speech for each speaker, from the same reading text as used in vowel measurements, is digitized and stored on disk for LTAS processing using a time-series data-capturing program on the PDP-11 minicomputer. One long-term average spectrum is computed for each speaker's voice, using a program on the main-frame computer which accepts only voiced frames of speech while excluding voiceless and low-energy frames. The power spectra of non-overlapping 20-msec windows at 50 Hz resolution and with a pre-emphasis factor of 1 are integrated to obtain the final long-term spectrum. Comparisons between the four groups operate on each of the eight spectra that comprise each group, while visual representations illustrate the average spectrum of each group.

4. STATISTICAL ANALYSIS

To compute the distance between vowel clusters of the contrasting groups, principal components analysis and canonical discriminant analysis are applied for all vowels across groups 1 through 4, and the Mahalanobis distance is computed between each group. This gives the probability with which collections of vowels, both as complete vocalic inventories and as individual vowel phonemes, are differentiated from one another. In addition, a generalized squared distance measure is used to compute, from the entire pool of values, the percentages of single tokens of F1,F2 coordinates that are located nearest the centroids of each of the four groups. Then, using an extension of this same technique, the vocalic inventories of male groups 1 through 4 are compared with previously analyzed model vowel data from reading texts performed by the author to represent contrasting parameters of articulatory setting. Here, test values are assigned to known reference groups in a procedure which yields the percentage of vowels in each group which associate most closely with each of the models (see Esling and Dickson 1985).

These statistics operate on unnormalized first and second formant data, with comparisons performed separately for female and male groups; and produce comparisons across four-group samples of some 600 female and 600 male vowels, and across the four groups for each vowel value one at a time. The same procedure is used to compute the distance between mean LTAS curves of the four female groups. When male LTAS calculations have been completed, they will be compared with LTAS values of the models of articulatory settings.

5. RESULTS FOR FEMALE GROUPS

Female vowel cluster data are significantly differentiated across the four social groups of the survey. All groups show separation at the $p<0.001$ level of significance, except groups 1 and 3 which are differentiated at the $p<0.05$ level, for comparisons of all vowels. Furthermore, a majority of individual vowel phonemes compared one at a time demonstrate similar differentiation across the four female groups. The most coherent and best differentiated groups are groups 2 and 4, illustrated in figures 1 and 2. Linguistic contexts are identical; only speakers vary, according to group affiliation. Figure 3 illustrates this acoustic separation visually on the articulatorily oriented formant chart, with the means of female and male groups. The groups occupy separate corners of the vowel space: group 1, high F1 and low F2; group 2, low F1 and low F2; group 3, low F1 and high F2; group 4, high F1 and high F2.

Female LTAS are not significantly differentiated across the four social divisions of the survey. Group 1 is differentiated from group 2 ($p<0.01$), and group 2 is differentiated significantly from group 4 ($p<0.01$), but other relationships show no significant separation. Figure 4 illustrates group means of the first two peaks of the female LTAS waveforms, and the lack of differentiation in the value of peak 2 that results. Since each speaker is represented by a single LTAS waveform, each cell consists of only eight tokens; whereas in comparisons of vocalic data, each cell consists of approximately 150 observations, with predictably greater reliability.

Female LTAS data do not corroborate vowel cluster distributions, except that groups 2 and 4 are similarly separated by both measures. Because of this difference in results, however, LTAS data appear to reflect other spectral information than what is contained in F1 and F2 of vowel nuclei. Clearly there will be differences, due to the inclusion in LTAS of voiced obstruents, but the direct relationship observed between vowel cluster and LTAS patterns in the speech sample of an urban black dialect of Houston, Texas, English (Esling and Dickson 1985: 166) is not demonstrated here.

6. RESULTS FOR MALE GROUPS

Male vowel cluster values follow the pattern of female values, except that group 1 is not significantly differentiated from group 3 (figure 3). As before, group 2 is the tightest group, and furthest separated from all other groups, particularly from group 4.

Earlier LTAS and vowel comparison experimental data associating extreme tongue-backed settings with working-class

FIGURE 1.

VANCOUVER VOWELS, FEMALE (1–4)

GROUP=2

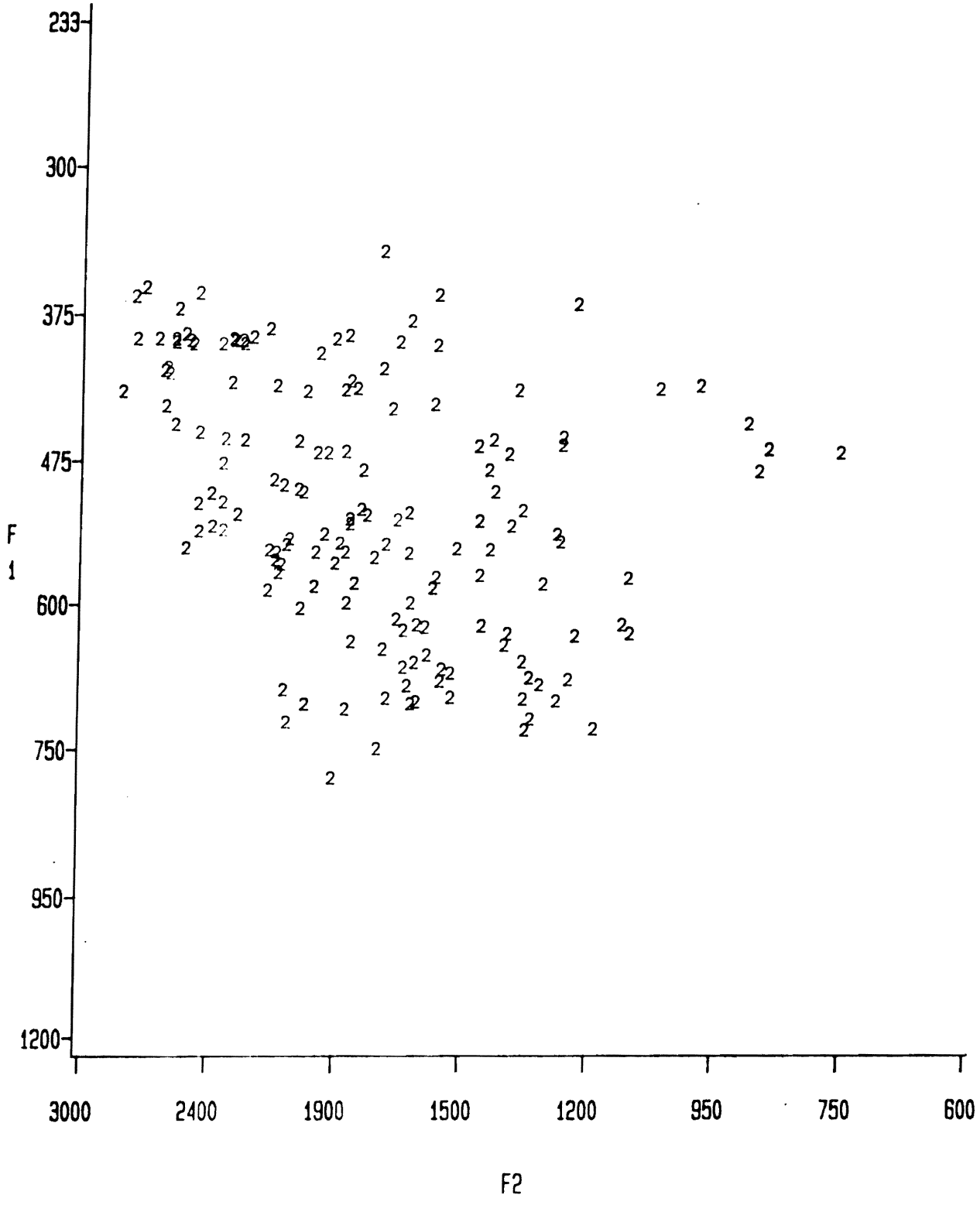


FIGURE 2.

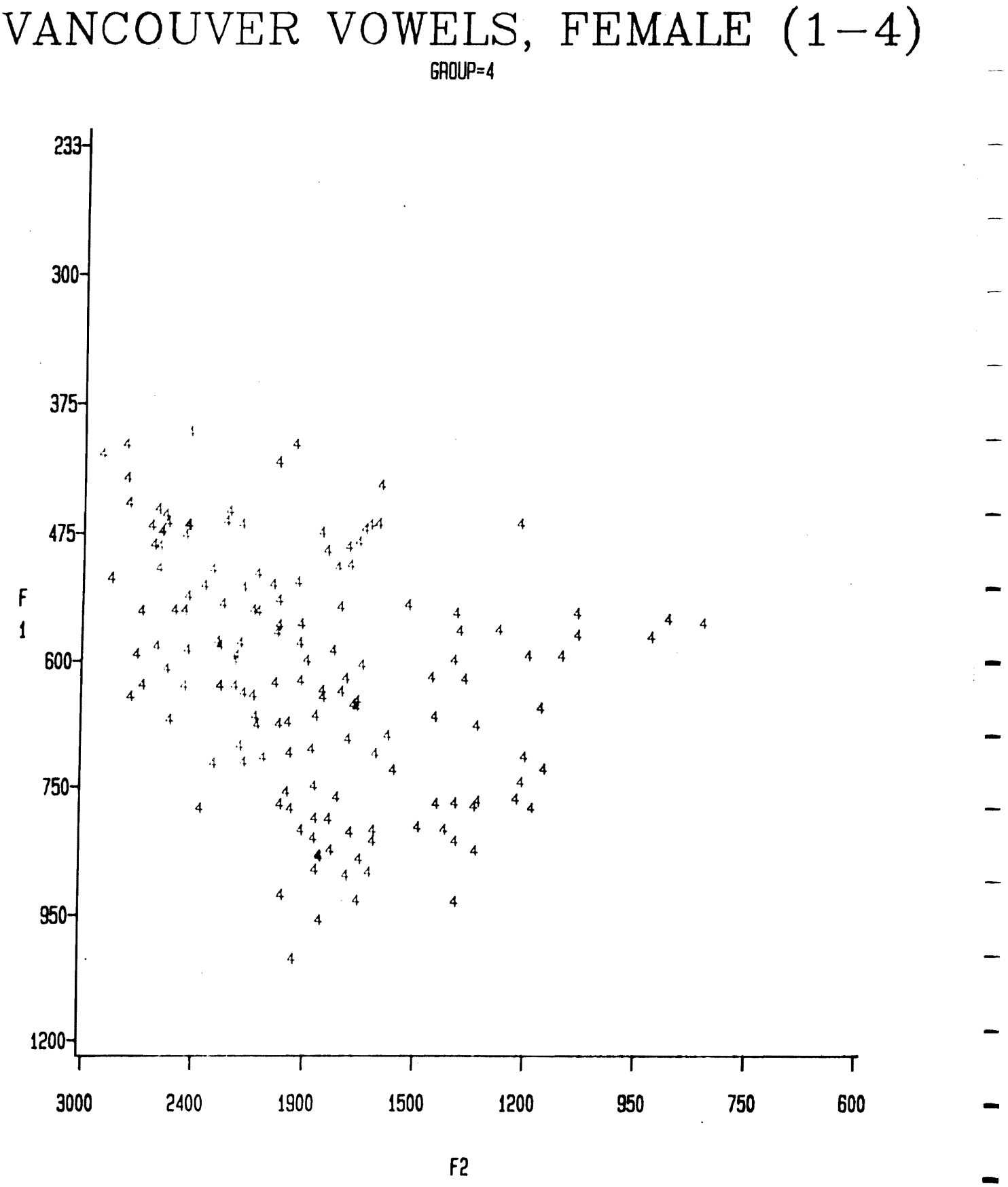

VANCOUVER VOWELS, FEMALE (1–4)
GROUP=4
233
300
375
475
600
750
950
1200
F
1
3000
2400
1900
1500
1200
950
750
600
F2

FIGURE 3.

VANCOUVER VOWELS (1–4)

FEMALE AND MALE VOCALIC MEANS

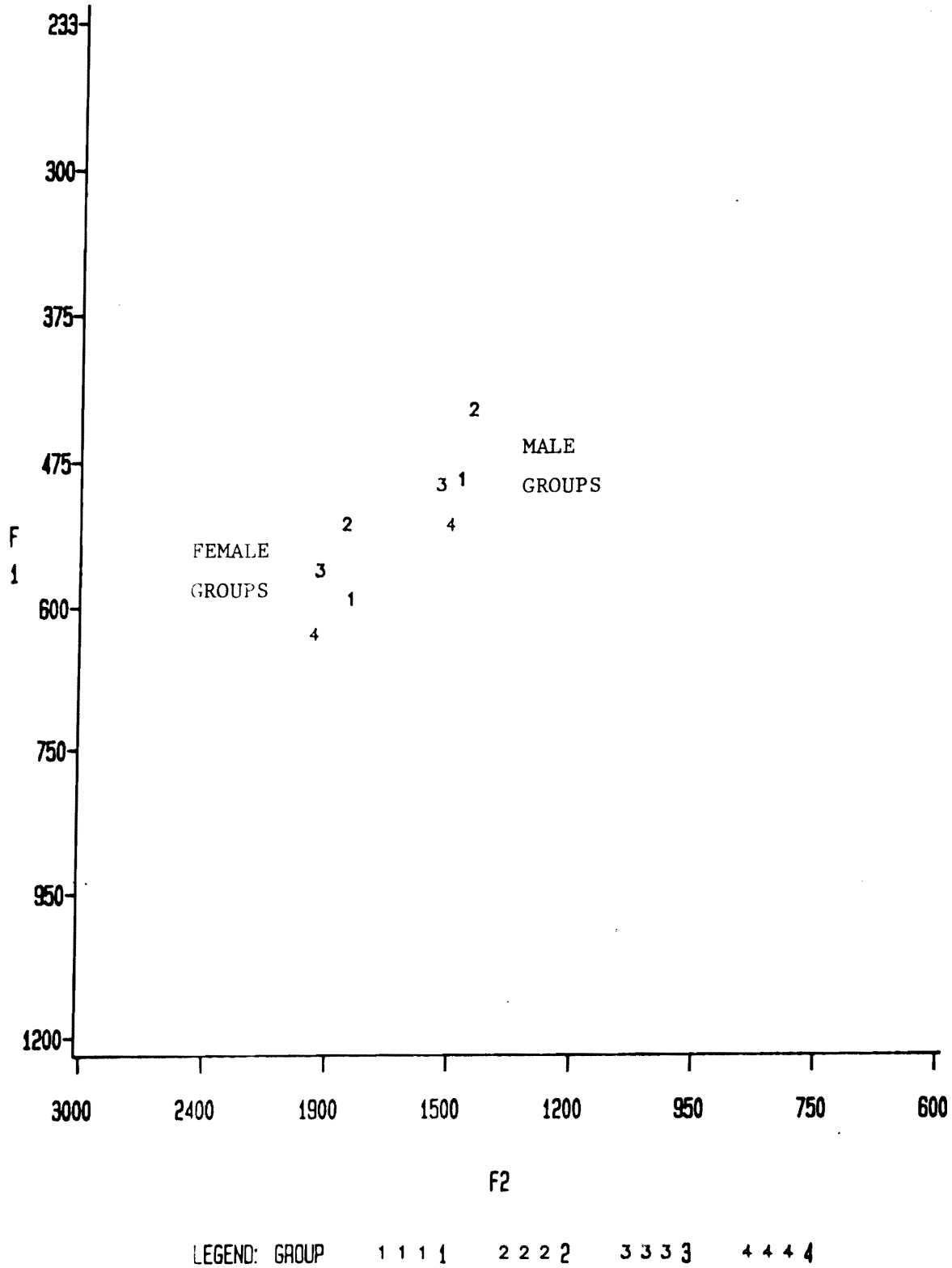
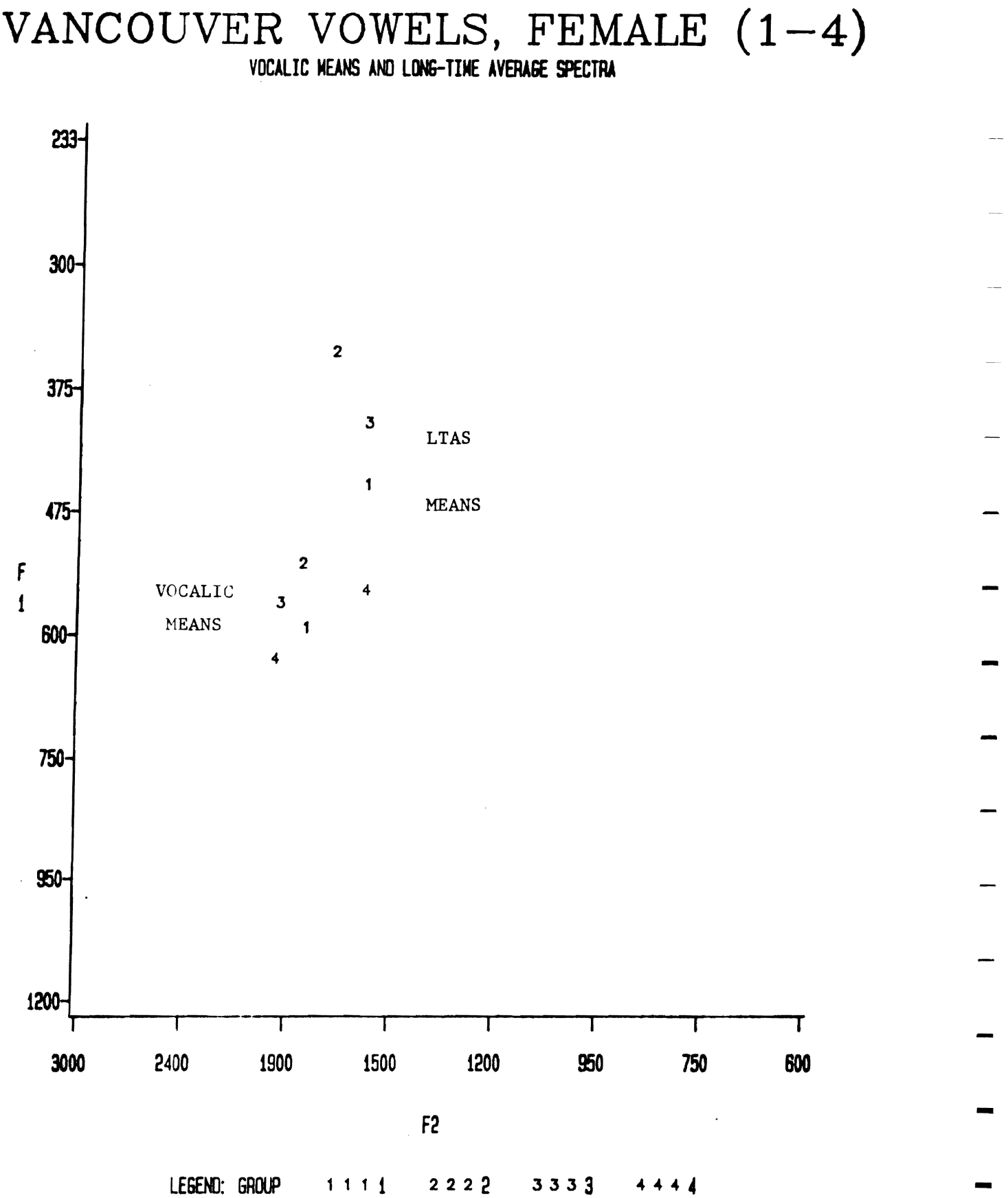


FIGURE 4.


VANCOUVER VOWELS, FEMALE (1–4)
VOCALIC MEANS AND LONG-TIME AVERAGE SPECTRA
233
300
375
475
600
750
950
1200
F1
LTAS
MEANS
VOCALIC
MEANS
3000
2400
1900
1500
1200
950
750
600
F2
LEGEND: GROUP 1 1 1 1 2 2 2 2 3 3 3 3 4 4 4 4

Vancouver speech can be demonstrated in the vowel cluster values for male groups 1 and 2, as distinct from values for groups 3 and 4 which imply articulatory fronting. It was impossible to differentiate earlier Vancouver data, which had been gathered from males in group 2 and group 1, from the LTAS or vowel cluster values of the Houston sample (Esling and Dickson 1985: 159-160). The Houston speakers are 14 community college students, all black and natives of the city, recorded in reading style in 1984. Further testing demonstrates that the Houston sample vowel data are indeed related to Vancouver groups 1 and 2 ($p>0.82$; 68% by generalized squared distance), while combined groups 1 and 2 remain distinct acoustically from combined Vancouver groups 3 and 4 ($p<0.0001$). In contrast with preliminary tests, the Houston data are significantly differentiated from Vancouver groups 3 and 4 in this extended comparison ($p<0.003$; 32% by squared distance).

7. ARTICULATORY INTERPRETATION

Articulatory interpretations of the acoustically differentiated female social groups are based initially on the parallel acoustic separation of the F1,F2 values of four supralaryngeal models evaluated in previous research (Esling and Dickson 1985: 163-166). The orientation of group 1 vowels resembles the low F2 of laryngo-pharyngalized tongue retraction. The low F1 of group 2 vowels suggests retraction with tongue raising as in velarization. High F2 in group 3 suggests fronting and raising as for palatalization. High F1 and F2 values in group 4 resemble the pattern of nasal voice.

To quantify these associations, sample data are compared with each phonetically performed model. Generalized squared distance assignments (of unknown values into known groups) relate male vowel cluster data and model data as follows (each row equals 100%):

group 1: L 23%; V 48%; P 19%; N 10%
group 2: L 14%; V 77%; P 07%; N 01%
group 3: L 24%; V 44%; P 23%; N 09%
group 4: L 28%; V 37%; P 19%; N 17%

where L represents laryngo-pharyngalized; V, velarized; P, palatalized; and N, nasalized voice. These associations are only performed for the male subjects at this stage since the model data represent male fundamental frequency and vocal tract shape, and the survey data are not normalized. The distributions suggest the same pattern observed for female vowel clusters, in particular between groups 2, where most velarized assignments are made, and 4, where most nasalized assignments are made. For the single vowel phoneme /ʌ/, the difference in the respective test-reference assignment of velarized and nasalized models to groups 2 and 4 is even more pronounced. Highest association of velarized vowels is with group 2 (85%), and highest association

of nasal vowels is with group 4 (50%). These results will be further tested for validity using normalized comparisons of combined female and male data with similarly normalized reference models of contrasting articulatory settings (see Hindle 1978).

8. MEASUREMENT OF FORMANTS

A word on technique of formant frequency measurement would be appropriate here. Monsen and Engebretson (1983: 89), comparing spectrographic techniques with linear prediction analysis of formant frequencies, have found that "for fundamental frequencies between 100 and 300 Hz, both methods are accurate to within approximately ±60 Hz for both first and second formants". The statistical procedures described above should be adequate to differentiate values within finely detailed enough frequency envelopes, but the question of how those original values were derived is both of greater relevance and of greater interest in helping to explain why formant frequencies differ and why they may be hard to measure. Monsen and Engebretson rightly point out that formant frequencies can be obscured by masking from the fundamental or broadening of bandwidths.

> To put it another way, all vowels are not created equal. It may be easier or harder to accurately recover the resonances of the vocal tract in the vowel sound wave depending on objective factors such as the fundamental frequency, the degree of nasalization of the vowel, or the position of the articulators (1983: 96).

The ILS peak-picking routine used here is observed to encounter masking problems of just this sort. Since the object of this study is to isolate those contributions of vocal tract resonance that are external to the individual vowels themselves, its results can help identify which articulatory configurations will affect otherwise identical vowels in a given way. Group 1 vowels produce greatest loss of second formant. This results in a smaller number of tokens that are acceptable for inclusion, and (perhaps not incidentally) wider deviation of the tokens that remain. Group 2 is the easiest group to measure, with all peaks and bandwidths clearly distinguishable, and has correspondingly the most coherent set of values. Group 3 is also not difficult to measure, but group 4 begins to demonstrate the appearance of an intermediate peak and widening bandwidths in all vowels for the largest number of speakers, both male and female. This secondary, usually higher amplitude peak overlaps in bandwidth with peak 1, and has been averaged into the computation of F1 since it is distinctly not associated with F2. This phenomenon occurs only rarely in other groups, and when it does the voice demonstrates pronounced nasality. It seems likely, therefore, that a generalized low back position of the articulators in group 1, evident in the F1,F2 values of remaining vowels, causes a

decreasing peak 2 to merge with an increasing peak 1 for many tokens. The fronted and nasalized setting of group 4, implied by the damped but increased values of peak 1 due to the combined calculation, and the slightly higher values of peak 2, would not be apparent if these somewhat spectrally confusing tokens had to be eliminated.

9. FURTHER RESEARCH

In summary, these results enable us to verify that the relationship found in preliminary research between Vancouver vowels and vowels from the Houston, Texas, sample is due to the predominance of group 1 and 2 subjects in the Vancouver test sample, and their acoustic similarity to the Houston sample. Vancouver group 3 and 4 subjects, on the other hand, demonstrate differentiated (fronted or nasalized) acoustic results from groups 1 and 2, as well as from the Houston (velarized) values. Groups 2 and 4 are clearly separated, with group 2 closely resembling the Houston speech and group 4 most differentiated from the Houston sample.

Consistent vowel clustering values for female data can be related to tests of phonetically modelled vowels as follows: 1, laryngo-pharyngalized; 2, velarized; 3, palatalized; 4, nasalized. These can now be posited as tentative articulatory explanations for testing in revised research procedures. As not all vowels respond to a particular background setting in the same way, each individual vowel set will be compared to the four models one at a time.

The relationships presented using the methods described here will be tested in continuing work with refined techniques, including: (a) integration and comparison of female and male values using log-mean normalization procedures, and comparison with similarly normalized phonetic models; (b) comparison of each vowel set with the vowel values of the various model articulatory settings; (c) inclusion of diphthong information in calculations of generalized group vowel clustering, to test for similar patterns; (d) LPC synthesis and test-reference matching where original vocalic values are modified synthetically for comparison with the original values of vowels from contrasting groups.

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A SITUATIONAL EXPLANATION OF DISCOURSE: THE CASE OF POLITICAL DISQUALIFICATION

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1. INTRODUCTION

Disqualification is vague, tangential, nonstraightforward communication. Previous research had shown that the disqualified speech of subjects who were role-playing politicians was the product of an avoidance-avoidance conflict. In the present field experiment, two groups of delegates at the Liberal Party of Canada leadership convention (1984) were asked, "Do you think the Liberals can win the next election under John Turner?" (the leading candidate). When responding to this question, delegates supporting Turner were not in any conflict. However, delegates supporting the second most popular candidate (Jean Chrétien) were in an avoidance-avoidance conflict, that is, they did not want to say Turner could win, nor did they want to say their party would lose. The responses of the delegates in an avoidance-avoidance conflict were more disqualified than the responses of the delegates not in conflict. The implications of the results of this simple conflict situation for the more complex conflict situations that politicians often encounter are discussed.

Disqualification is nonstraightforward communication and includes such speech acts as "self-contradictions, inconsistencies, subject switches, tangentializations, incomplete sentences, misunderstandings, obscure style, or mannerisms of speech" (Watzlawick, Beavin and Jackson 1967: 76). One can find numerous examples of political disqualification on the news or even in carefully scripted political commercials (Joslyn 1980). This paper applies a situational theory of disqualification to explain the vague, tangential communication that politicians often use (Bavelas 1983, 1985 and Bavelas and Chovil 1985).

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[1] Authors' contributions were equal. The order of authorship on all papers that originate from the Victoria Group is alphabetical. The authors would like to thank the Social Sciences and Humanities Research Council of Canada for their generous support and Charles Lemery for his thorough editing, thought-provoking comments, and encouragement. This paper was presented at the International Communication Association conference in Honolulu, Hawaii (May, 1984).

2. DEFINING AND MEASURING DISQUALIFICATION

Haley (1959) proposed a model of the essential elements of communication that can be used to arrive at a more precise definition of disqualification. All communication should contain four elements: *I* (sender) am saying *this* (content) to *you* (receiver) in this *situation* (context). Furthermore, Haley noted that a disqualified message obscures at least one of these four elements. We have translated Haley's four elements into questions, by which the degree of disqualification in a message can be assessed:

Sender: To what extent is the message *the speaker's own opinion*?

Content: How clear is the message, in terms of *what is being said*?

Receiver: To what extent is the message *addressed to the other person*?

Context: To what extent is this a *direct answer to the question*? (Bavelas 1982)

Analysis of the following example of political disqualification illustrates two of the above dimensions:

Q: Do you favor or oppose federal gun control?

A: I favor control of the so-called Saturday Night Special, snud-nosed (*sic*) ... snub-nosed guns that are used only to kill police and each other for concealment. There is no excuse for their use.

(Walter Mondale in response to Dan Rather at a Democratic candidates' debate held in New York, March 28, 1984.)

The content (*what is being said*) of Walter Mondale's response is disqualified. The first sentence of the response is unclear. Aside from the obvious speech error ("snud-nosed guns"), the last phrase implies that guns kill "each other" to remain concealed. Moreover, the term "Saturday Night Special" is ambiguous, since it can refer to a kind of handgun (e.g., a snub-nosed gun) or a particular use of a handgun (e.g., guns used to kill police) or the legal status of a handgun (e.g., a concealed weapon). Also the second sentence is unclear; since there is no clear referent for the phrase "their use", the connection between the two sentences is obscure.

Walter Mondale's response to Dan Rather's question is also disqualified on the context dimension (*direct answer to the question*). Mr. Mondale's reply seems to answer a much different question: Do you favor the control of guns that are used only to

kill policemen, and do you think there is an excuse for their use?

3. A SITUATIONAL THEORY

One could attribute a politician's disqualified speech to personal shortcomings or furtive intentions (e.g. Graber 1976, Spero 1980). Our research, however, has demonstrated that disqualified speech is a function of the individual's situation (Bavelas 1983, 1985). We have extended Lewin's (1938) conflict theory to communicational settings and found that disqualified speech occurs when a speaker has a choice between two unattractive communicational alternatives. In Lewinian terms, the speaker is in an avoidance-avoidance conflict, and disqualification is the successful solution to the dilemma. For example, Walter Mondale is caught between two large and vocal constituencies, those for and against gun control. His best option was to avoid offending either group. Seen in this light, Walter Mondale's ambiguity and re-interpretation of the question is a skillful response to a problematic question.

To investigate the antecedents of disqualified speech, we have used a simple experimental paradigm in which subjects are randomly assigned to an avoidance-avoidance conflict or to a nonconflict situation. We have conducted the previous 19 disqualification experiments by using a number of hypothetical situations, ranging from a choice between either lying or hurting a friend's feelings to a choice between either lying for financial gain or telling the truth at a financial cost. The subjects in these experiments have written their replies, replied to questions on the telephone, and answered questions face-to-face with an experimenter. In all experiments, regardless of the communication format or the situation, disqualified communication was the product of an avoidance-avoidance conflict situation.

One experiment in this paradigm (Bavelas 1985) is germane to the present discussion. In this study, subjects were asked to imagine themselves as a Member of Parliament; a highway was being planned for the home riding and two routes were being considered. Subjects in the conflict condition were told that both routes had advantages and disadvantages and that the constituency was equally divided about which route was better. In the nonconflict situation, subjects were told that, of the two routes being considered, one route was clearly better and favored by the constituents. All subjects were asked to respond by telegram to a hometown reporter's question, "Which route do you prefer, Route A or Route B?" The written responses of the subjects in the avoidance-avoidance conflict were disqualified on the content and context dimensions; that is, they were vague in content and did not answer the reporter's question, while the responses of subjects in the nonconflict situation were clear and directly answered the question.

This experiment provided strong support for a situational explanation of political disqualification. The responses of university students in a common political dilemma (avoiding a commitment that would alienate part of the electorate) appeared indistinguishable from the statements of real politicians in similar situations. The subjects in this hypothetical political dilemma also had the time to construct and write their answers carefully. Consequently, the disqualified responses are not attributable to time pressure or error but rather to the avoidance-avoidance conflict.

However, we were appropriately cautious about generalizing the results of this experiment to an explanation of actual political disqualification. It could be that politicians (unlike university students) are by nature vague, in which case a conflict situation may not be necessary to produce disqualification by politicians. This same assumption (that politicians are fundamentally different from the average human being) would also suggest that they might be impervious to conflict situations. It may also be that avoidance-avoidance conflicts do not occur in actual political settings. Finally, the results of the experiment may be limited to written communication and should not be generalized to spoken or other forms of communication.

4. THE LIBERAL PARTY CONVENTION 1984

The present experiment addresses the limitations of our previous research. We conducted a field experiment at the 1984 leadership convention of the Liberal Party of Canada. The party leader chosen to succeed Pierre Trudeau would serve as Prime Minister and subsequently lead the party in the coming election. Elected delegates responded to a question posed by an experimenter/interviewer. Thus, subjects in our study were politicians participating in an actual political event. Since the experimenter interviewed the delegates with a tape recorder, the limitations of written responses are transcended. Finally, in order to ensure that an avoidance-avoidance conflict was the necessary and sufficient situational antecedent of political disqualification, the experimenter asked a question designed to put some delegates in an avoidance-avoidance conflict and other delegates in a nonconflict situation.

4.1 Method

4.1.1 Subjects

Thirty-eight delegates (25 males, 13 females) attending the Liberal Leadership convention in Ottawa in July, 1984, participated voluntarily in the experiment. Thirteen of the subjects' first language was French and 25 of the subjects' first language was English. All interviews were conducted in English.

For reasons to be described below, the final number of subjects whose messages were analyzed was 12.

4.1.2 Procedure

All interviews took place at the convention site (Ottawa Civic Centre) the day before the balloting for party leader took place. The experimenter introduced herself to each delegate as a student conducting a study of political communication and asked if s/he would answer some questions. If the delegate consented, the experimenter began to tape record the interview. The experimenter first asked the delegate which candidate s/he was committed to and whether s/he was an elected delegate. The experimenter then asked the delegate several questions, the first of which was, "Do you think the Liberals can win the next election under John Turner?" After the interview, the experimenter thanked the delegates for answering her questions.

Which candidate the delegate supported determined whether or not the question put him/her in an avoidance-avoidance conflict. Delegates supporting John Turner were considered not to be in a conflict situation, since polls at the time indicated he would be elected as the next Prime Minister of Canada, and they obviously thought he could win. Jean Chrétien's supporters were considered to be in an avoidance-avoidance conflict, since they were caught between two unpleasant communicational alternatives: vocal disloyalty to the party (e.g., "No, the Liberals cannot win the next election under John Turner") or vocal disloyalty to their candidate by conceding a major point to another candidate (e.g., "Yes, the Liberals can win under John Turner").

To determine which messages were suitable for analysis, the interviews were analyzed for variations in procedure. Of the 38 delegates interviewed, 12 supported John Turner and 26 supported Jean Chrétien. Half of the Turner responses could not be analyzed (two of the supporters were not actually elected delegates, one delegate indicated wavering support, and the experimenter asked the question incorrectly of three others). Ten of the responses of the 26 Chrétien supporters were dropped from further analysis (three of the Chrétien supporters were not elected delegates, two supporters' responses were obscured by background noise, one delegate indicated wavering support, and the question was asked incorrectly on four occasions).

These procedural checks left six responses by Turner delegates that were suitable for analysis. Hence, the remaining 16 Chrétien responses were reduced to six by matching their characteristics to those of the John Turner delegates on two potentially confounding factors, first language and sex of subject. From a total of six male English speakers who supported Jean Chrétien, the responses of two were randomly selected. From a total of four female English speakers two responses were randomly selected. From a total of four male French speakers, one message was randomly selected, and one female French speaking

delegate was randomly selected from two possible choices. After this selection process there were 12 messages for the judges to scale, six conflict messages and six nonconflict messages.

4.1.3 Measures

The messages generated by the delegates were scaled by lay judges using our established scaling procedure (Bavelas and Smith 1982). The judges scale the messages for each dimension of disqualification (sender, content, receiver, and context) using a magnitude estimation procedure. These raw scores are standardized and averaged across judges, so that a single value can be given to each message on the dimension. In addition, the values for each message are summed across the four dimensions of disqualification to obtain a total disqualification for each message.

Other research has demonstrated that avoidance-avoidance conflicts take longer to resolve than do nonconflict situations (Barker 1942, 1946). Since response latency has been used to show the effects of such conflict situations, this measure can be used to provide further evidence that delegates were indeed in a conflict situation. Thus, the time between the end of the experimenter's question and the beginning of the delegate's response was measured.

4.2 Results

The messages, scale values, and *t* comparisons are reported in Table 1. On the content and receiver dimensions of disqualification, there were no significant differences between the messages of the conflict and nonconflict delegates. However, there were significant differences of the sender and context dimensions of disqualification. The delegates in the avoidance-avoidance conflict did not state their own opinion and did not answer the question as directly as did the delegates in the nonconflict situation. Moreover, the summed scale values of the conflict and nonconflict messages were significantly different, so the messages of the delegates in the conflict situation were *in total* more disqualified than the messages of the delegates in the nonconflict situation.[2]

The response latencies of delegates in the conflict situation (mean = 1.80 seconds, standard deviation = 1.08) were longer than those of delegates in the nonconflict situation ($\bar{X}$ = .75 sec, *SD* = .36). A *t* comparison of the difference between the conflict and nonconflict latency times was significant (t = 2.29, df = 10,

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[2] Over a series of 19 disqualification experiments to date, the *context* dimension has always been significant, that is, it seems to be the most likely means by which a message is disqualified.

Table 1: Messages, Scaled Values and "t" Comparisons[a]

Nonconflict Messages

1: Sure do.
(sender = .22, content = .53, receiver = .72, context = -.75, sum = .72)

2: I think so ... yes. I think with the momentum of the convention and fairly soon ... and an election fairly soon I think that's possible.
(sender = -.78, content = -.12, receiver = -.75, context = -.43, sum = -2.08)

3: Yes I do.
(sender = -.04, content = -.01, receiver = .93, context = -.98, sum = -.10)

4: I believe so yes. He can especially attract the west.
(sender = -.23, content = .28, receiver = -.26, context Z= -.26, sum = -.47)

5: Yes, I think so. It's why I ahhh my vote will ahhh to John Turner.
(sender = -.73, content = .11, receiver = -.07, context = -.71, sum = -1.40)

6: I'm sure of it. Not only will we win, but we'll have a majority government I think.
(sender = -1.05, content = -.94, receiver = -.31, context = -.26, sum = -2.56)

Conflict Messages

1: Yes (hesitantly).
(sender = 1.38, content = .13, receiver = .77, context = -.86, sum = 1.42)

2: Well ahhh maybe they could, but I think it would be better to have Chrétien. Chrétien is my man and I think he's ahh everybody likes him... and he's been in the House of Commons for so long... he's got the experience... he's the one that can lead us to a victory. Definitely. Maybe Turner would do it, but Chrétien sure would.
(sender = -.18, content = -.24, receiver = .40, context = .89, sum = .87)

3: We could win, yes.
(sender = .71, content = -.42, receiver = .13, context = -.25, sum = .17)

Table 1 (continued).

4: Under John Turner? Ahhmm I think that the Liberals are in a good position right now to win under a strong leader and I think John Turner would be a strong leader. But of course I'm biased I think it ahe (*sic*) would have a stronger chance of winning under Jean Chrétien.
(sender = .03, content = .02, receiver = -1.15, context = .92, sum = -.18)

5: Ahhh I think the Liberals have a good chance of winning elections with either Mr. Chrétien or Mr. Turner. So ah I think that the Liberals are bound to win the next election the way things are going now. So I think either if they have Mr. Chrétien or Mr. Turner their chances are good. The reason I'm for Mr. Chrétien is that I think he's the candidate of continuity and that's what I'm looking for. So ahh that's why I support him.
(sender = -.12, content = -.43, receiver = -.50, context = 1.09, sum = .04)

6: Ah no. I really don't. Certainly not in the west, ahhm because Mr. Turner represents Bay Street and everything that is feared in ah Alberta... certainly in the oil patch. And ahh so I would say ah any hope we have. We would have such respect to go with Mr. Chrétien. That ahh with Mr. Turner we could write off Alberta as far as getting members elected. And I'm really concerned about the east... for that same reason. I don't think the easter... I don't think the east would vote for Mr. Chrétien because he's French, I think it would be because of his party loyalty and his performance and those are the exact same reasons, of course, the west respects him.
(sender = .70, content = 1.19, receiver = .07, context = 1.60, sum = 3.56)

	Sender	Content	Receiver	Context	Sum
$\bar{X}$ nonconflict	-.44	-.03	.04	-.57	-.98
$\bar{X}$ conflict	.42	.04	-.05	.57	.98
t(10)	2.65	.20	.22	2.85	2.56
p<	.025	ns.	ns.	.01	.025
Reliabilities[b]					
this set	0.84	0.59	0.78	0.96	
test set	0.90	0.98	0.98	0.97	

Table 1 (continued).

[a] After transformation, a positive value indicates that the messages are relatively more disqualified.
[b] Intraclass correlations are highly sensitive to curtailment of range, hence the apparently lower reliabilities of the content and receiver dimensions. The same judges' scalings of the more varied message set used in the reliability trial are highly reliable. (Cf. Bavelas and Smith 1982.)

$p < .03$), providing evidence that the delegates who supported Jean Chrétien were indeed in an avoidance-avoidance conflict.

One could criticize the small *N* used in this experiment. However, the power of any statistical test is inversely related to *N*; therefore, the use of a small *N* is in fact a more conservative test of our hypothesis. Moreover, the results of this field study are a successful replication of the laboratory study which according to Winer (1971: 391) allows us greater generalizability than a single study with a larger *N*:

> Inferences from replicated experiments have a broader scope than do inferences from a non-replicated experiment.

5. DISCUSSION

These results suggest that the avoidance-avoidance alternatives of a conflict situation are not only sufficient but necessary to produce disqualified communication. In the conflict situation, the politicians avoided giving their own opinion and avoided answering the question directly. On the other hand, politicians in the nonconflict situation stated their own opinions and directly addressed the question.

The similarity between our previous experiment conducted in the laboratory with students in an imaginary political situation and the present experiment in the actual political setting is worth reviewing. The politician's dilemma seems to be avoiding saying the wrong thing: Walter Mondale did not want to offend either the group who supports or the group who opposes gun control. Our laboratory subjects did not want to take a stand that would alienate one half of the constituency. Here, the delegates had to choose between implicit criticism of their own candidate or of their party. It is important to note that in both experiments, when the conflict was not present, respondents did not disqualify.

In actual political situations, questions that do not create a conflict of this kind are rare. In this arena the voters, relationships with the press, controversial "hot potato" issues, and the importance of appearing committed without actually committing oneself all contribute to create a complex conflict situation. In addition, there is the risk that the politician's disqualified answer will not satisfy the reporter. Here the reporter re-phrases the politician's answer in a more hostile manner (Heritage 1985). In such cases, the politician's dilemma becomes more acute, since the already complex conflict situation would become embroiled with an interpersonal conflict.

An example from the American 1984 vice-presidential debate illustrates the complexity of these political conflict situations. Vice-president Bush was reminded that, four years earlier, he was in favor of federally financed abortions in special cases, and he was asked if he now agreed with President Reagan that abortion was akin to murder. Bush replied with a skillfully disqualified response that his stand on abortion had undergone an evolutionary process since the number of abortions had increased dramatically. He went on to quote figures and ended by saying that he now supported the President's position. The interviewer pressed, "So you believe it's akin to murder?" Bush hesitated, stuttered, and replied, "No, I ge (*sic*)..support the President's position", thereby avoiding a personal opinion on whether or not abortion is murder. Bush had to respond, but there were several problems to be dealt with. The reporter used inflammatory words such as "murder" and would not let Bush evade the question. Bush could neither differ with a central tenet of the Reagan platform, nor could he lie, nor risk offending pro-life voters, nor risk offending pro-choice voters. Finally, whatever he said must come across as strongly committed and as responsive to the reporter's questions. In the end, after the obvious attempts to disqualify, Bush had little choice but to appear to agree with President Reagan. As we saw in our field experiment, loyalty to the party had to be maintained. Given the complexity of the contingencies in Bush's situation (and certainly many other political situations), it is remarkable that a statement can be formulated at all. Furthermore, it is not surprising that a politician choses to disqualify and avoid the conflict when possible.

Graber (1976: 11) justifies the study of political communication on the grounds that from these "lies, half-lies, and other reality distortions" we can make judgements about a politician's character. While we concur with Graber that political communication should be studied (and that clarity is desirable), our data suggest that such communication should not be used to make generalizations about politicians as individuals. Our research has demonstrated that these "half-lies" and "reality distortions" reveal the *situation* that the politician is in and not his/her individual character flaws. We propose that such communication is not "an unwilling mirror of the soul" (Arora and Lasswell 1986: 2) but a mirror of the communicative situation in

all its complexities.

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WORD CHOICE IN TWO CANADIAN URBAN SURVEYS

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This paper will discuss the choice of lexical item, with the requirement of semantic sameness, as it relates to socio-economic status, age and sex and compare the effect of geographic distance relating to this word selection in urban surveys in two Canadian cities several thousand kilometres apart. I hope thereby to illustrate cross-Canadian socio-cultural and sociolinguistic similarities in lexical choice.

The geographic and social distribution of lexical items in North America has been of especial interest since Kurath's (1949) research on vocabulary in the Eastern United States revealed three main dialect divisions with eighteen regional varieties. It is an interest confirmed once more with the recent publication of volume I of the long-awaited *Dictionary of American Regional English*, edited by Cassidy (1985).

Indeed, it is primarily through the lexicon that Canadian English has been differentiated historically from the northern speech area of the United States, and established as an independent branch of World English. In terms of frequency, meaning and usage, certain words or word forms, such as ['kʰɑ:ɹki] versus ['kʰæki.], and /zed/ rather than /zi/ are considered to be typical of Canadian speech. Thus, Avis' (1954) study of speech differences along the Ontario-U.S. border demonstrated a strong preference for the British (or U.S. Midland) form in a number of synonymic word pairs, e.g., *tap(s)* versus *faucet*, and *blind(s)* versus *shade(s)*, with *chesterfield*, a Canadianism, chosen by almost 90% of the informants over the more usual *sofa* of neighbouring New York or Michigan. This study of lexical pairs establishing the incidence of characteristic British versus American forms in Canadian speech was extended to Montreal English by Hamilton (1958), and to the middle border region, i.e., from northwestern Ontario to southeastern Saskatchewan by Allen (1959).

Studies within Canada have also indicated social, as well as regional, variation in usage: Scargill and Warkentyne's (1972) report on the national Survey of Canadian English in which respondents were grouped according to location (i.e., province), generation and gender, suggested certain lexical shifts in the high school population, while Gregg (1973), in a survey carried out by H. Woods of over a hundred adults and teenagers in the

Kootenay region of British Columbia, reported an increasing preference among the young for the term *couch* over *chesterfield* (a trend also noted by Metcalf 1972 for Southern California, where *sofa* was the dominant word).

Two recent symbiotic Canadian sociolinguistic surveys, one on the Pacific Coast, and the other on the Ontario-Quebec linguistic border, with sound stratified random sampling techniques, have elicited lexical items which allow a comparison of word choice to be made in cities several thousand kilometres apart. In the first urban socio-dialectal survey to be reported on in Canada, Woods (1979), with one hundred informants, investigating the speech of Ottawa, the capital city, found ordered differentiation with respect to age, sex or class in the choice of typical Canadian terms, such as *tap(s)* and *blind(s)*, while Gregg (1984), with two hundred and forty informants in the Survey of Greater Vancouver English (SVEN), presented a detailed sociolinguistic analysis of certain vocabulary items which confirmed the declining use of the term *chesterfield* among younger speakers.

It is perhaps useful from the perspective of Canadian English as a whole, to compare the occurrence of lexical items in word sets from these two surveys, as this choice relates regionally to location, and socially to age, sex and socio-economic status in order to find areas of agreement and conservatism, or patterns of change. On the basis of earlier work, we might hypothesize, for example, that older speakers, females, and those of higher status will retain to a varying degree an established term or a traditional value, and that change will be initiated in the younger group, or with those socially less well established. By combining lexical data from the Woods and Gregg surveys, and dichotomizing the informants on the basis of location, gender, generation, i.e., plus or minus forty, and socio-economic status with two groups, a Higher, Group II, and a Lower, Group I (giving a total of sixteen cell groups), co-variation with a lexical item may be investigated.

To avoid semantic confusion (Underwood 1968), comparable lexical items were chosen from Picture (or Audio-Visual) style, with a similar pictorial representation in either survey used to evoke the desired referent. Words offered in response to a particular visual stimulus thus may be considered part of a semantic set, as, for example, *sofa/chesterfield/couch/lounge/divan* or *frying pan/fry pan/skillet/spider*. Once co-variation with a sociological parameter can be established, particular values may be considered to comprise a linguistic variable. Other such word sets include household items *tap(s)/faucet*; *blind(s)/shade(s)/curtain(s)*; *silverware/cutlery/flatware*, and outdoors, the terms *railway/railroad*.

Of the six typically Canadian terms to be discussed, there are four with considerable agreement in overall score between Ottawa and Vancouver. These are *frying pan*, *tap(s)*, *cutlery* and *railway* versus *railroad* where the frequency counts for Vancouver and

Ottawa respectively, for each item are as follows:

Lexical Item	Vancouver	Ottawa
frying pan	82%	79%
taps	67%	59%
cutlery	46%	44%
railway	39%	54%
railroad	37%	43%

To predict the incidence of variability in the population at large, a logistic model from the SAS[1] or Statistical Analysis System programme package was used. In each set, items with relatively high frequency counts were tested, while words with a low response, or multiple answers, were not included in the analysis. In the case of items such as *frying pan*, for example, where, despite the incidence of household flyers advertising *skillet* (Kimball 1963), the overall response for which in both Ottawa and Vancouver surveys was approximately 80%, any expected variation might be considered to arise from the performance of different cell groups in choice of that term rather than from widespread selection of the alternative, *fry pan*, which was chosen by only 10% of the informants. (*Skillet* and *spider* were the other choices in Ottawa, while *skillet* and multiple choices of *frying pan* with *griddle*, and *fry pan* with *skillet* were offered in Vancouver.) Thus, older men of lower status in Vancouver choose *frying pan* more often than would otherwise be expected, and lower status older men in Ottawa less often.

The most interesting word sets are those in which several alternative terms may be tested for variability, as in the case of *sofa/chesterfield/couch* where 72% in Vancouver, and 44% in Ottawa opted for the characteristic Canadian term, with *sofa* and *couch* dividing the remainder. With respect to the choice of a particular value of this linguistic item (Hudson 1980), it was found that the explanatory variables of location and age were both very highly significant (at the level of $P<.0001$), with an interaction of location, sex and class significant at the level $P<.02$. There were also indications of a tendency towards interaction of all four independent variables, with class alone just over the level of 5% significance.

As other studies have noted, and with some regional disparity, the use of *chesterfield* is on the decline among those under forty, with *couch* the generational preference. Although *chesterfield* is still the predominant form in Vancouver, with *couch* second, in Ottawa, *couch* is chosen more frequently by those

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[1] I am greatly indebted to Virginia Green, Statistical Consultant, Arts Computing, University of British Columbia, and Jean Wu, formerly of Arts Computing, UBC, for their technical advice and assistance with this programme package.

under forty of low status, with *sofa* equally favoured by those of Group II. *Chesterfield* is strongly preserved by those over forty in Vancouver, and by those over forty of higher status in Ottawa, where it is the prestige term (Woods 1979: 263). The choice of *chesterfield* and *couch* vary in accordance with the age parameter. Regionally, the use of *sofa* is somewhat more frequent in Ottawa.

In the case of *blind*(*s*) versus *shade*(*s*), 64% of those in Ottawa and 85% in Vancouver opt for the typically Canadian term *blind*(*s*). Again, both location ($P<.0001$) and age ($P<.0005$) are very highly significant in choice, with an indication of interacting effects of location, age and class, and of location, sex and class. For example, in Vancouver, lower status males under forty in particular, and young women of the same status, choose *blind*(*s*) much less often than other cell groups. In Ottawa, the highest scores for *blind*(*s*) are for older men of low status with the lowest choice occurring in high status younger men. Among women choice of *blind*(*s*) appears to co-vary with socio-economic status. Among those under forty in Vancouver, the term *shade*(*s*) is slowly gaining ground among those of lower status, while in Ottawa, *blind*(*s*) could be considered a prestige term, preserved by those over forty of higher status. With regional differences in choice, these terms co-vary along the parameter of age.

In the case of *tap*(*s*) versus *faucet*, the term *tap*(*s*) was chosen by two-thirds of the Vancouver informants, and 60% of those in Ottawa, although 8% of those in the Vancouver sample admitted to using both terms equally. Age (at the level of $P<.003$) and gender (at the level of $P<.02$) were both highly significant, with location, as a factor, just over the 95% confidence level. In Vancouver, the lowest score for use of *tap*(*s*) occurs among males under forty, and the highest among older women. Stratified by age and class, women in Vancouver choose the term *tap*(*s*) more frequently than men in comparable status groups. In Ottawa, where its use is less frequent, the term *faucet* is chosen by more than 50% of those under forty of high status, though *tap*(*s*) is strongly preserved in the speech of young women of Group I.

With respect to *silverware/cutlery/flatware*, *cutlery*, the characteristic Canadian term and predominant form, was chosen by 46% in Vancouver, and 44% in Ottawa. In choice of the term, class ($P<.001$) and age ($P<.01$) are both highly significant, with location and an interaction of sex, age and class also indicators of choice. While in both cities higher status young women choose the term *cutlery* more often than those of lower status, an ordered co-variation in women occurs on the basis of age in Vancouver, and on the basis of socio-economic status in Ottawa. The term *flatware* is also chosen equally by women over forty in Vancouver, and the term *silverware* more often by those of lower status in Ottawa, where *silverware* is generally a second choice. The choice of *cutlery* is reasonably consistent among men in Vancouver, although lower status young men are also apt to choose

the term *silverware*, the typically Canadian term being retained most often by older men of high status. The parameters of variation for these terms are age and socio-economic status.

While the non-household terms *railway/railroad* occur almost equally often in Vancouver speech, *railway* is chosen by slightly more than 50% of the Ottawa informants. The significant correlates are with class ($P<.02$) and with an interaction of age and class ($P<.04$). While there is no significant variation on the basis of location, among women in Vancouver, the choice of the term *railway* is ordered according to status, with a greater preference shown for *railroad* among younger women of Group I. The term *railway* is thus preserved by those over forty of higher status in both cities. In Ottawa, males over forty of high status and young men of low status are retaining the term relative to women. Young women tend to choose *railroad* with a frequency of 55% although its highest use is among lower status older men (at 75%). These terms vary along parameters of age and class.

In reviewing the correlates of variation in these six word sets location, the regional variable, is very highly significant in the choice of only two: *sofa/chesterfield/couch* and *blind(s)/shade(s)* and indicative of a tendency in the choice *tap(s)/faucet* and *cutlery/silverware/flatware*. Of the four independent variables, age or generation is an important factor in choice of four of the six word sets. For example, age, like location, is very highly significant in the choice of *chesterfield* and *blind(s)*; highly significant in the choice of *tap(s)* and significant in the choice of *cutlery*. Class is an important factor in two word sets. It is highly significant in the choice of *cutlery*, and significant in *railway* versus *railroad*, where an interaction of age and class also occur. Gender is significant in choice of one word set: *tap(s)/faucet*. It is indicative of a trend, however, in the *sofa* variable, where an interaction of location, sex and class was also significant. It would seem from the small number of word sets tested that generation is the most often occurring factor, followed by location and socio-economic status, while gender and a combination of factors are important in single linguistic items.

It has been hypothesized (Hudson 1980: 45) that vocabulary and syntactic items might be used to identify our current status in society. It would appear, from the evidence of certain word sets, that there is a trend to a weakening of Canadian influence on lexical choice among those under forty.

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THE ROLE OF COHESION AND COHERENCE IN PROCESSING LITERARY TEXTS

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1. INTRODUCTION

The purpose of this paper is to consider the process of comprehending literature from within the framework of a communicative act. The conception of a communicative act adopted here embraces three distinct yet interacting elements: the author as the intentional initiator of a communication, the text as the resulting structured surface representation of the sender's intent, and the reader as the agent by which the communication is processed and meaning is made of it. While there is nothing especially new in this conception (for an early discussion, see Cherry 1957), its implications for text processing in general and for the processing of literary texts in particular remain incomplete.

The process of literary communication will be first examined from the perspective of the nature of literature and literary texts and the differences which exist between literary texts and non-literary texts. This discussion will then be carried forward by adopting the concepts of cohesion and coherence in order to give greater precision and psychological reality to the discussion of the comprehension of literary texts which follows.

2. THE NATURE OF LITERARY TEXTS

Consider the following text fragments, each comprising the first few lines from longer texts:

[1] About 1,200 anti-nuclear protesters camped outside a U.S. Air Force base Sunday night, the vanguard of thousands expected at a rally against the deployment of new cruise missiles. They pitched tents and erected make-shift shelters in a field turned into a sea of mud by heavy rains to await the arrival of others for today's rally.

[2] Stately, plump Buck Mulligan came from the stairhead, bearing a bowl of lather on which a mirror and a razor lay crossed. A yellow dressing-gown, ungirdled, was sustained gently behind him by the mild morning air.

[3] The science that has been developed around the facts of language passed through three stages before finding its true and unique object. First something called "grammar"

was studied. This study, initiated by the Greeks and continued mainly by the French, was based on logic.

[4] Here let us stand, close by the cathedral.
Here let us wait.
Are we drawn by danger? Is it the knowledge
of safety, that draws our feet
Towards the cathedral? What danger can be
For us, the poor, the poor women of
Canterbury?

[5] The isolation of factors involved in the identification of a word and the meaning it represents is among the most problematic areas in reading research. Yet the need to understand the word identification process and how it develops is critical, as the mastery of rapid context-free word identification appears to be one of the major factors that separates good from poor readers.[1]

Although there are similarities among these texts, there are differences too. Put simply, some texts seem to be "literary" while others do not. The question is what makes the difference? Why is it that in reading [2] and [4] one gains a somewhat different "feel" for the text than one does in reading [1], [3], and [5]? It is the nature of these differences, particularly as they relate to the comprehension of literary texts, that is the focus of attention here.

In the first instance, [2] and [4] announce themselves in different ways: they signal a movement into themselves rather than making reference to an external reality upon which their interpretation depends. The reader gains a sense of an authorially contrived internal reality formulated within the text for which external referents cease to exist. This is immediately apparent in [4] simply by the author's use of blank verse. But the text goes beyond this to reveal a world which, although possessing an apparently historical and therefore externally verifiable reality (Canterbury cathedral), exists as a unique creation within the text itself. The way this works can be demonstrated in the repetitive emphasis in the first line, and the questions which follow. These serve to place the reader in front of the obstinate chorus, questioning their questioning, seeking to understand the ideational configuration which informs their world. This is not the conventional world of the reader's

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[1] The sources of these texts are the first lines of the following: [1] an Associated Press news story entitled "Protesters Descend on N-base", *The Toronto Globe and Mail*, April 8, 1985; [2] James Joyce's *Ulysses* (1960); [3] Ferdinand de Saussure's *Course in General Linguistics* (1959); [4] T.S. Eliot's *Murder in the Cathedral* (1935); and [5] a report of a research study entitled "The Influence of Basal Readers in First Grade Reading" by Juel and Schneider (1985) published in the *Reading Research Quarterly*.

experience; it is a separate world conceived and created by the author which the reader must conceptually enter for it to become comprehensible. That the reader does seek to enter it derives from the reader's interpretive impulse, the reader's felt need to bring order to this new and unexplored conceptual landscape.

With [2], the prose reveals no ordinary man and behaves in no ordinary way. The reader gains a sense of a character being portrayed, of the deliberate development of a personality within an imaginative universe. For example, the bizarre juxtaposition of "stately, plump" introduces immediate evidence of authorial commentary and control. Finely selected and highly adjudicative, the words are initial components of a carefully contrived construct of reality, a construct in which "a yellow dressing-gown, ungirdled" can be "sustained...by the mild morning air."

All of this contrasts with [1], [3], and [5]. Here the reader is drawn into the text but is at the same time referred outside it for verification. The worlds of an anti-nuclear protest, the history of linguistics, and an experimental study of word meaning all exist beyond the text and depend on external reference for their comprehension. These texts do not pretend to be unique - unified and independent of other referential material. They are in fact fragments of the texts their authors would have the reader construct, and it is their external referentiality which their authors depend upon for the reader to do this. These texts point to what is known as the basis for their discussion of what is to be known. They present a framework which the reader fills in according to his experiential knowledge of the world. In this way, these texts provide a conventionalized context for their communication in that they do not create separate realities whose rules of operation must first be learned if they are to become comprehensible. The references of [1], [3], and [5] are to a world external to the text, to the world of ordinary experience, to the subject of conventional human activity, and not to a self-referential, deliberately contrived world of the imagination.

3. COHESION AND COHERENCE IN LITERARY TEXTS

A discussion of the nature of literature and literary texts such as the one above is necessary to provide a basis for a consideration of the comprehension of literature. Without such discussions, literary texts are in danger of being conceived merely as a subset of non-literary texts, peculiar but not necessarily different in their conception and execution, to say nothing of their comprehension. But these discussions are essentially impressionistic and imprecise. While they reveal some of the underlying characteristics of literary texts, they fail to establish in any disciplined way the linguistic and psychological processes through which comprehension is achieved.

For this reason, the concepts of cohesion and coherence are introduced here to add rigor to the discussion of literary comprehension, and to provide the basis for a fuller account of the linguistic and psychological processes upon which literary communication depends.

3.1 Cohesion in Literary Texts

The most comprehensive and generally recognized study of text cohesion has been provided by Halliday and Hasan (1976).[2] They describe cohesion by means of their notion of "text" which they define as "any piece of language that is operational, functioning as a unity in some context of situation" (1976: 293). A text is not a string of sentences making up a larger grammatical unit, but rather it is a semantic unit, a unit "not of form but of meaning" (1976: 2). Semantic unity is achieved through "texture," the relations which exist both within and among the sentences of a text. It is through these relations that cohesion is established. Halliday and Hasan describe these relations in terms of "ties," or occurrences of pairs of related text items. They argue that "the concept of a tie makes it possible to analyse a text in terms of its cohesive properties, and give a systematic account of its patterns of texture" (1976: 4). Their study is mainly concerned with illustrating the different kinds of ties through which English texts supposedly cohere; they designate these as reference, ellipsis and substitution, conjunction, and lexical cohesion. In this way, they demonstrate their contention that cohesion is a relational concept which does not depend on the constituent structures of texts. Instead, they maintain that it is through the "non-structural text-forming relations" established by the various ties of a text that cohesion is established (1976: 7). Cohesion is therefore a property of the surface text; it describes the configuration of interrelations within a text by which its apparent unity is established.

But Halliday and Hasan proceed from a description of the cohesive elements of texts to draw some implications for their interpretation. They argue that "what cohesion has to do with is the way in which the meaning of the [text] elements is interpreted" (1976: 11). Maintaining that "cohesion expresses the continuity that exists between one part of the text and another," they contend that it is this continuity that "enables the reader or listener to supply all the missing pieces, all the components of the picture which are not present in the text but are necessary to its interpretation" (1976: 299).

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[2] The description of text cohesion which Halliday and Hasan presented in their study has recently been reiterated by Halliday (1985).

Halliday and Hasan therefore introduce the question of text processing within their notion of text structure. Through their description of the reader filling in missing pieces in the text, they seemingly unwittingly move from a description of the surface structure of texts to a description of text processing. This process orientation is revealed in their statement at the conclusion of their study that their linguistic analysis "is not an interpretation of what the text means; it is an explanation of why and how it means what it does" (1976: 327-328).

While they admit that the specific nature of interpretation constitutes "one of the major problems in understanding linguistic interaction," they characterize interpretation as a "decoding process" (1976: 299-300). In doing so they reveal their text-based bias, a bias which is further illustrated in their statement that the continuity of a text "is not merely an interesting feature that is associated with text; it is a necessary element in the interpretation of text" (1976: 300). There is a strong suggestion here that it is the text which carries meaning through its cohesive ties establishing the continuity of its message, and it is the task of the reader to interpret this message, albeit an incomplete one, on the basis of these ties. The text becomes in this way an iconic representation of meaning, and its comprehension lies in decoding this meaning from within its cohesive structure.[3]

But the notion of meaning-in-text has suffered almost certain defeat in recent years (see Spiro 1980, for a review). The general finding of this research is that the comprehension of texts depends upon an interactive process between information brought to the text by the reader and the information found in the text. While text cohesion - the surface features a text presents to its reader - cannot be dismissed as a factor in comprehension (Gumperz, Kaltman, and O'Connor 1984; Marshall and Glock 1978-1979; Webber 1980), it is now relatively safe to conclude from the accumulated research evidence that comprehension does not result exclusively or even directly from the decoding of these features alone. This raises the question of what utility can be drawn from Halliday and Hasan's notion of cohesion in seeking to understand the comprehension of literary texts.

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[3] This notion of meaning-in-text is generally characteristic of studies of cohesion. See, for example, Gutwinski's (1976: 25) statement that "the structure of the semiologic stratum...finds its manifestation in the relatively shallower structure of the grammar and is still recoverable from it"; and Grimes' (1975: 18) contention that, "ideally, the factors on which a critic bases his judgment ought to be built into a writer before he starts writing." This reasoning has also provided the basis for a recent discussion of reading comprehension founded on Halliday and Hasan's concept of cohesion (Chapman 1983).

The premise that literary texts display communicative intent provides the basis for a tentative answer to this question. If the author, the text, and the reader are seen to be mutually interactive yet independent agents in a communication process, then the place of cohesion, particularly in literary comprehension, becomes clearer. Halliday and Hasan provide support for this clarification through their emphasis on cohesion as "part of the text-forming component in the linguistic system" (1976: 27). They state that cohesion may be described as "a set of possibilities that exist in the language for making text hang together: the potential that the speaker or writer has at his disposal" (1976: 18). It is this notion of potential that is important here. Cohesion may be considered as a powerful concept for describing the language resources available to an author.

Seen in this way, as the description of a fundamental resource available to the author, the concept of text cohesion makes a significant contribution to an understanding of the process of literary communication. For the author, cohesion plays a central part in the creative process since it is by the conscious use of the cohesive resources of language that he is able to express the conceptual unity of his imagination. A fair assumption is that the author of a literary work begins with some controlling idea, a macrostructural view of the shape of his work, at the very least the beginning of a conceptual model of the reality he wishes to represent through his work (Harker 1978). It is through the cohesive power of the linguistic elements he selects that the author effects this encoding. In this way the authorially intended linguistic and ideational fusion of a work of literature comes into being. This fusion has long been recognized by literary critics,[4] although the psycholinguistic processes through which it is achieved have remained relatively unexplored. Viewing text cohesion, not as a determiner of interpretation, nor merely as a description of textual continuity, but rather as an authorial device through which a unified model of an imagined reality is encoded in a literary text, places cohesion in a clearer prospective in literary communication.

3.2 Coherence in Literary Texts

While a text, if it is to communicate anything, must be made cohesive by its author, this is a structural quality of the text itself and does not describe the process by which the reader transforms the text into a meaningful communication. A text with no reader remains an empty vessel, having potential but no

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[4] For example, in his essay, "What Does Poetry Communicate?", Cleanth Brooks (1947: 74) writes that "the poem is not only the linguistic vehicle which conveys the thing communicated most 'poetically', but...it is also the sole linguistic vehicle which conveys the thing communicated accurately."

actuality, awaiting a reader to give it meaning. It is through structure becoming process that the relationship between cohesion and coherence is established.

Cohesion refers to the structural unity on the surface of a text produced by its author; coherence refers to the end result of the cognitive process by which the text is transformed into a consistent communication in the mind of the reader. As cohesion is a static, visible quality of the text itself, coherence is the outcome of a dynamic process by which the text is transformed into a psychological unity by the reader. Put another way, cohesion is a property of the text depended upon by the author to express his intended meaning, while coherence is the outcome of comprehending a text experienced by the reader. The former is a conscious device of the author; the latter is largely an unconscious process of the reader. It remains to consider this relationship as it applies to literary texts.

Any attempt to review the full range of research and theory relating to text processing which has arisen in recent years is not possible within the space available here (for a review see de Beaugrande and Dressler 1981). Rather than attempting this, one model has been selected - that of van Dijk and Kintsch (1983) - to provide the basis for the discussion of the role of coherence in the comprehension of literary texts which follows.[5] Contending that previous models of text processing have been misguided by a concern with representing the structure of knowledge in the mind, van Dijk and Kintsch propose to explore "the dynamic aspect of processing" (1983: 61), the manner in which knowledge is activated and used by the reader during the comprehension process. Their model begins with the text itself as the initial input to the system. The text is then decoded into a list of atomic propositions which represent its meaning elements. These propositions in turn become organized into larger units on the basis of knowledge structures (schemata) to make up a coherent textbase. It is from this textbase that a macrostructure is

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[5] The van Dijk and Kintsch model evolves out of a continuing program of theory and research which can be traced through the major works of its authors (particularly van Dijk 1972; Kintsch 1974; Kintsch and van Dijk 1978) for over a decade. Their latest model is an extension and elaboration of their 1978 model, and it represents one of the most comprehensive accounts of text processing available. Moreover, an indication of its likely impact on future research can be taken from the fact that, in a recent study of citation rates (Guthrie, Seifert, and Mosberg 1983), their 1978 model was found to be the most frequently cited review in reading research (the term "review" as used by the authors of this report is arguably a misnomer). It is probable that the 1983 model will have a similar impact, and it is on this basis, together with its comprehensiveness, that it is used here.

formed which represents the essential information in the textbase, its gist.

Although van Dijk and Kintsch represent the various stages of processing in terms of levels, from word units up to macrostructures, they do not conceive text processing as proceeding in a linear fashion through these levels. Rather, their model is interactive and characterized by continuous feedback among its lower and higher levels. For this reason they maintain that their model is not a conventional structural model, but a strategic model, one which demonstrates the dynamic processing of the text in the mind of the reader.

This notion of strategy is fundamental to van Dijk and Kintsch's representation of text processing. They describe strategies as being "part of our general knowledge" since "they represent the procedural knowledge we have about understanding discourse" (van Dijk and Kintsch 1983: 11). However, strategies have to be learned before they can become automatic, and various strategies are necessary for the comprehension of different types of text. Strategies may be "local" by which the meanings of clauses and sentences and the meanings and functions of relations between sentences are established, or they may be "global" by which the meanings of discourse fragments or whole discourses are determined. It is by bringing a combination of these two kinds of strategy to a text that the reader establishes its coherence. As van Dijk and Kintsch (1983: 90) put it, "the strategies of a discourse understander not only involve correctly establishing the relationship between the sentences as they reflect relationships in our knowledge of reality, but also involve interpreting the selection and ordering evidenced in the discourse." Thus the recognition of the authorially encoded cohesion of a text is not enough; the reader, to render the text meaningful, brings a coherence of his own making to it. This process of coherence building is essentially strategic.

Together with their account of the reader's construction of a semantic textbase, van Dijk and Kintsch also introduce their notion of the situation model which functions in parallel with the textbase. It is by means of the situation model that the reader integrates his existing world knowledge with information found in the text. The situation model incorporates the reader's previous experiences regarding the situation being read about as well as his general knowledge about the same or similar situations. Thus the information being constructed by the reader in the semantic textbase is constantly being compared with the situation model. The comprehension of a text, then, results from not only what the text conceptually represents in the mind of the reader, but also what comparative world knowledge it refers to in the mind of the reader. It is for this reason that van Dijk and Kintsch (1983: 337) maintain that:

> To understand the text we have to represent what it is about. If we are unable to imagine a situation in

> which certain individuals have the properties or relations indicated by the text, we fail to understand the text itself. If we do not understand the relations between the local facts and the global facts to which the text refers, we do not understand the text.

In this way, the situation model provides the basis for comprehension: "a prerequisite for a coherent text representation is the ability to construct a coherent situation model" (van Dijk and Kintsch 1983: 361). The situation model contains the knowledge which is conventionally implied by the text or is in some way assumed by it. It expresses the reference to an external reality on which the text depends for its coherence to be established. That literary texts are denied this direct referentiality is one of the most compelling reasons to consider their comprehension as a special case in text processing.

4. CONCLUSION

It has been argued that a literary work creates its own reality and in this sense literary texts are self-referential. They depend for their coherence not upon direct reference to the outside world of conventional affairs (that world which is assumed by the authors of [1], [3], and [5]), but rather upon their own web of self-referentiality. It is this self-referentiality which defines their uniqueness, both as authorially conceived artifices, and as objects of reader-directed coherence strategies. There are no guideposts to the understanding of literary texts besides those they express themselves. There are no allusions or direct references to the conventional world. When such allusions or references are made, they are to be viewed with caution, as devices in the hands of authors whose intent is to create through them the different worlds of their imagination, not to refer to the conventional world of normal experience.

Literary texts must therefore be "learned" in a somewhat deliberate way. The textbase built by the reader of a literary work has no explicit external referent, no situation model with which it can be compared. Rather, the internal system of self-referentiality of literary texts must be formulated piece by piece if the reader is to gain control over them, if they are to become coherent in the reader's mind. For this reason, the reader needs to unlearn the conventionalized situation model he brings to the text from the world of his everyday experience. In its place he must construct along with the semantic textbase the situational model for the text from within the self-referentiality of the text itself. It is this dual activity, and the processing load it imposes, which might explain the difficulty many readers have comprehending literary texts. It might also explain the multiplicity of interpretations which even "expert" readings of literary texts provide; that these

texts permit, by virtue of their lack of an externally observable reality against which they may be compared, an almost unlimited range of possible interpretations, even taking their textbase into account, explains not only the ubiquity but also the variety of literary criticism.

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DISCOURSE CONSTRAINTS IN AMBIGUITY PROCESSING: EVIDENCE FROM DICHOTIC LISTENING

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1. INTRODUCTION

The study of ambiguous sentences has been a critical area of study in both linguistics and psycholinguistics. In linguistics, of course, the centrality of the sentence in the development of linguistic theory required responsive parsing procedures for sentences which admit more than one reading or interpretation. Similarly, in psycholinguistics understanding sentence comprehension would also require that dealing with sentences with multiple readings would be a necessary component of sentence processing, especially when one considers how common ambiguity is in natural language. It has been generally accepted that understanding the way in which ambiguous sentences are processed will be germane to understanding the way in which normal unambiguous sentences are dealt with. This has been taken by many studies to mean inquiring into how the presence of ambiguity might actually affect the computation of the sentence's interpretation, and whether ambiguous sentences as such do show processing differences from unambiguous sentences in a variety of tasks.

However, the problem with ambiguous sentences has been that no easy resolution of the way in which multiple readings of ambiguous utterances are realized in actual sentence processing has been available. There are several studies which argue for a single interpretation or a canonically ordered access approach to the selection of the more probable single reading, but the results of most experiments in ambiguity have tended to suggest that the processing of ambiguous sentences does differ from unambiguous sentences and that multiple readings are in fact considered in the process of deciding upon a single interpretation. There is even considerable evidence that multiple readings are activated for ambiguous sentences despite the presence of context.

One of the most compelling of these studies was a dichotic listening experiment by Lackner and Garrett (1972) in which subjects were dichotically presented with ambiguous sentences and a disambiguating context sentence. Subjects were required to attend to the channel in which the ambiguous sentences were presented and to then immediately paraphrase the ambiguous structure in the attended ear. Although the disambiguating

material in the unattended ear was below active comprehension recognition, its biasing contextual information significantly influenced the interpretation of the ambiguous sentences being consciously attended to. One thus argued from these results that analysis of contextual material in the unattended channel did in fact take place, and that during its input multiple readings for the ambiguity were in fact considered.

Lackner and Garrett's experiment certainly demonstrates that analysis of the linguistic material presented to the unattended ear did take place. This is of course the only reasonable explanation of how the ambiguous sentences were able to be biased in the way in which they were. Equally important is the fact that both of the readings of the ambiguous sentence would have had to be present during the actual processing procedure for the biasing to have effectively taken place, for it was possible to bias the subjects in either direction, in favor of the preferred or the less likely interpretations of the ambiguous sentence. Very simply, their findings underscore the fact that all the readings of an ambiguous sentence are considered and that this is true for all ambiguity types, lexical as well as structural ambiguities. Since the biasing sentence was provided simultaneously with the ambiguous sentence, with processing of both readings taking place in the light of the contextual information which was being presented to the unattended ear and analyzed, the results seem to negate the possibility that only a single analysis is assigned to an ambiguity at the point in time at which it occurs.

Our experiment attempts to provide enough biasing context of a specific and thematically relevant kind, so that only one interpretation is likely. Thus, we hypothesized that listeners would be guided by the organizational frame of reference provided by the flow of discourse we provided as preceding context to choose one and only one reading for the ambiguous sentence. That is, we expected that context of this type would force listeners to evaluate the ambiguities in only the one direction. We have been influenced here by discourse analysis research in the area of text comprehension and the evaluation of the thematic structures we either have or actively construct in our understanding of stories, scripts, and scenes (see Kintsch 1977; van Dijk 1977, 1979; Kintsch and van Dijk 1978; Mandler 1984). According to Kintsch and van Dijk, a discourse is coherent when its individual sentences and constituent propositions are connected by being organized at some macrostructural level. Thus, a text is not merely an unrelated list of propositions, but a set of propositional units which are cross-referenced to one another and catalogued under one or several macro-propositions within which they find their comprehensional identity. Moreover, even if such propositions are not directly expressed, they may be inferred by the listener on the basis of more general world knowledge or on the basis of a contextual knowledge of the restrictions surrounding a specific script or scenario (see Mandler 1984, for an excellent review). It is these

organizational macrostructures which provide semantic coherence to a discourse and which make for a meaningful whole. Otherwise, the ongoing discourse sequence could easily be viewed as just a sequence of unrelated propositions which would have to be evaluated each and every one for their possible meanings and corresponding interpretations. What is important in processing the incoming discourse is obtaining the gist of the text, and it is the construction of a meaningful gist that consumes our attention. There is always an overriding schema which controls our comprehension, and we either extract one from the discourse which is readily available, or in those cases where the discourse does not offer a readily available schema, we construct one in order to have the input make sense to us. Such macrostructures in effect define what is most important about a given discourse sequence. According to van Dijk (1979), they are defined in such a way that propositions which are not relevant are either deleted or taken under the heading of a more general organizational proposition. By extension, we might assume that such macrostructures guide the subsequent interpretation of incoming additions to the discourse in a highly restrictive sense. If this working hypothesis is correct, then, we might hypothesize that ambiguous sentences in certain types of context exhibit few differences, if any, with normal sentences. Thus, in this experiment we hypothesized that disambiguating information provided to the unattended ear does not have as powerful an effect in contributing to the interpretation chosen, when in the presence of a more powerful attention-getting thematic context.

Our contexts attempted to restrict the interpretation of an ambiguous structure to only one of the two readings potentially available. We considered that the effect of this restrictive context would be powerful enough to override the simultaneous presentation of the other interpretation being presented to the unattended ear while the ambiguous sentence was being presented to the attended ear. Since Lackner and Garrett's previous results clearly establish the contribution of such simultaneously presented disambiguating sentences, we should expect that the disambiguating effects of such sentences should continue in the presence of such context if both readings continue to be accessed. However, we would suggest that a highly restrictive biasing context will have such an overwhelming effect as to block the second reading altogether, even in the presence of a disambiguating sentence presented to the unattended ear.

2. METHOD

2.1 Procedure

The experiment was derived from the earlier experiment by Lackner and Garrett (1972) where they, using a dichotic listening task, presented an ambiguous sentence to an attended ear of a subject and a disambiguating sentence to the unattended ear. The subject then paraphrased the ambiguous sentence, giving an

unambiguous meaning. The subjects tended to give paraphrases which were consistent with the disambiguating sentence whether it was in the direction of one meaning or the other meaning of the ambiguous sentence, thereby supporting the multiple-reading hypothesis where both interpretations of an ambiguous structure are activated when an ambiguity is encountered. The procedure of our experiment was similar except that the presentation of the sentences was preceded by the presentation of a thematically biasing context for the ambiguous sentence.

In a dichotic listening task 80 subjects were presented with a previously recorded audio tape containing 7 practice and 21 trial items. They were instructed to listen to a paragraph which "tells a story". When the paragraph was finished, they were further instructed that a short pause would appear, followed by two sentences, one presented to each ear simultaneously. Subjects were instructed to listen only to the right ear and to ignore the left ear completely. The ambiguous sentence was presented to the attended right ear and the disambiguating sentence to the unattended left ear. The disambiguating sentence was presented slightly less intensely and slightly later than the ambiguous sentence. The ambiguous sentences were read with a normal intonation and without any specific attempt at disambiguating between the two meanings by suprasegmental means. When the sentences were completed, the subject was to tell in his or her own words what the sentence meant, that is, to paraphrase it, without simply repeating what was on the tape. During practice runs, subjects could receive coaching and further instructions in response to questions, but not during the actual trials themselves.

The subjects' paraphrased responses were rated to fall into one of four categories: (1) the predetermined "A" meaning; (2) the predetermined "B" meaning; (3) subjects did not disambiguate or repeated the sentence; (4) subjects went off the topic.

2.2 Design

Many of the previous studies involving context have been centred around lexical ambiguities in sentential contexts. Given the relative inattention paid to syntactic ambiguities and their resolution in the face of context, our study also included structural ambiguities of the surface and underlying types. Twenty-one ambiguous sentences, seven each of lexical, surface and underlying ambiguity types, were used along with seven unambiguous control sentences. Each of the ambiguous sentences was paired with another sentence that disambiguated the ambiguity in the direction of one (A) or the other reading (B). The unambiguous sentences were paired with other unambiguous sentences and were included to make it unlikely that subjects noticed a relationship between the material presented in the two ears. The disambiguating sentence was almost identical to the ambiguous sentence, differing in one or several crucial words

which would clearly render them unambiguous as either the first or second meaning. For each subject sentences were preceded by 65-to-70-word contexts we have used in previous research. These context paragraphs were designed to "tell a story", namely, to revolve around a theme from which a thematic macrostructure could be easily inferred by the listeners. The paragraph would logically terminate with one or the other meaning of the ambiguous sentence in question. These contexts attempt to strongly bias the reading of the ambiguous sentence in one direction (DA) or the other direction (DB). There were thus four possible groups of stimulus materials.

(1) Group 1 contained the ambiguous sentences paired with A of the disambiguating sentences and were preceded by DA of the contexts.
(2) Group 2 contained the ambiguous sentences paired with A of the disambiguating sentences and were preceded by DB of the contexts.
(3) Group 3 contained the ambiguous sentences paired with B of the disambiguating sentences and were preceded by DA of the contexts.
(4) Group 4 contained the ambiguous sentences paired with B of the disambiguating sentences and preceded by DB of the contexts.

3. RESULTS

Most of the subjects' responses could be characterized as paraphrases of an A-meaning or a B-meaning. Approximately one-quarter of the responses could not be so categorized and almost all of these repeated the ambiguous sentence which had been presented to the attended ear. Therefore, for each sentence it was possible to compare the proportion of responses which were consistent in meaning with the previous context by using z-tests of proportions.

Considering first the condition where the context was consistent with one meaning of the ambiguous sentence and was also consistent with the meaning of the disambiguating sentence (Groups 1 and 4), there was a total of 42 of these instances. Of those 42 instances, 36 produced a significant difference of proportions ($p < .05$), such that subjects gave more meanings which were consistent with the context and the meaning of the disambiguating sentence than were inconsistent with both; that is, the A-meaning was given when the context was DA and the B-meaning was given when the context was DB more than instances in which the B-meaning was given when the context was DA or instances in which the A-meaning was given when the context was DB. Five of the 42 instances produced no significant differences in proportions. In only one instance of the 42 did the ambiguous sentence produce a significant difference ($p < .05$) where more subjects gave the meaning which was inconsistent with both the

meaning of the context and the meaning of the disambiguating sentence.

The crucial conditions are groups 2 and 3 where the context was consistent with one meaning of the ambiguous sentence and inconsistent with the other meaning of the ambiguous sentence, that meaning, however, being consistent with the disambiguating sentence being presented to the unattended ear. There was also a total of 42 of these instances; of the 42, in 28 there was a significant difference ($p < .05$), such that the proportion of meanings consistent with the context and inconsistent with the meanings of the disambiguating sentences was greater than the proportions of meanings which were inconsistent with the context and consistent with the meaning of the disambiguating sentences. That is, the proportion of A-meanings given when the context was DA and the B-meanings given when the context was DB was significantly greater than the proportion of meanings consistent with the disambiguating sentences in 28 of the 42 instances. In the remaining 13 of the 42 instances there were no significant differences in the proportions of one meaning versus the other meaning; however, of these 9 were in the direction of the context and 4 in the direction of the disambiguating sentence. Finally, in only 1 instance of the total 42 was the proportion of meaning consistent with the disambiguating sentence and inconsistent with the context significantly greater ($p < .05$) than the proportion of meaning consistent with the context and inconsistent with the meaning of the disambiguating sentence.

Clearly, the context strongly influenced the perceived meaning of the ambiguous sentence over the influence of the disambiguating sentence presented to the unattended ear. It is interesting to note that the influence of context was across all types of ambiguity (lexical, surface, and underlying), since no differences were found among the types.

While the subjects were not asked specifically if they noticed that the sentence presented to the unattended ear was different from that presented to the attended ear, 10 percent volunteered the fact that one was different from the other on at least one occasion.

4. DISCUSSION AND CONCLUSIONS

The results suggest that the context preceding an ambiguous sentence strongly biases the meaning of the sentence. Lackner and Garrett's (1972) results, which demonstrated the influence of a disambiguating sentence presented to an unattended ear, thus supporting a multiple-reading hypothesis of ambiguity processing, were likely due to the ambiguous sentences appearing isolated from context. While we may process separate ambiguous sentences in a multiple-meaning way, the more natural way of processing sentences in a thematic context is to process only one meaning of

an ambiguous sentence, that meaning which is consistent with the context. Many of us have recalled, anecdotally, that when an ambiguous sentence begins a passage the ambiguity is more likely to be noticed than when it occurs embedded in a passage. Single-sentence ambiguity seems to be an attention-getting factor, considering the current spate of it in advertising (Kess, Copeland & Hoppe 1984). It is probably attention-getting because the two meanings are recognized when it is presented in an isolated sentence, offering support for the multiple-reading hypothesis at the conscious level. However, in the more typical instance of comprehending sentences in context, a prior or post-retrieval selective access hypothesis is more appropriate. These results do not distinguish between a prior or post-retrieval of a single meaning.

During the early period of the study of ambiguity, many experiments supported one form or another of the multiple-reading hypothesis, but many used ambiguous sentences or sentence fragments in isolation (Kess and Hoppe 1981). Since then some studies have used a context prior to the presentation of the ambiguous sentence and the findings have been mixed, with some supporting the multiple-reading hypothesis and some not. The present study offers strong support for a selective access hypothesis since it demonstrates that the dichotic listening support of the multiple-reading hypothesis disappears when the ambiguity occurs following a thematically biasing context.

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BORROWED WORDS AND PREHISTORY ALONG THE STRAITS OF JUAN DE FUCA

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A careful study of the sorts of words that one language has adopted from another sometimes gives important clues as to the sorts of influence one group of people has had on another. In English, for example, the specialized vocabularies of ballet and the sport of mountain climbing are replete with words introduced from French. In fact, a dancer would find it impossible and a mountain climber difficult to talk about their respective specialities without recourse to many words borrowed from French. Consider *pas de deux*, *pilé*, *jeté en tournant*, and the word *ballet* itself; or, in the case of mountain climbing, *rappel*, *glissade*, *court d'echelle*, and *verglas*. These words attest to the important influence the French had upon our own culture in these two areas (to say nothing of the culinary arts). Our music terminology reveals an equally pervasive influence from Italian. Such words as *opera*, *piano*, *soprano*, and *adagio* come quickly to mind.

On the other hand, when two quite similar cultures have been in close contact, we do not find whole sets of borrowed words that reflect particular domains of thought, activity, or skill as in the above examples from French and Italian on English. Instead we find a heterogeneous assortment of terms reflecting the give and take of everyday life. Those of you who remember early English history will recall the Danelaw and how Scandinavians went to England first as invaders and later as settlers in the eighth, ninth, and tenth centuries. The English and Scandinavians of that period had relatively similar cultures; and the Scandinavians did not permanently alter the English life style in any special sphere of activity so far as we can judge by Old Norse words that entered English at that period. Note what a mixed bag of concepts these Old Norse loans express: *birth*, *egg*, *sister*, *flat*, *weak*, *get*, *give*, *take*, and our Canadian political division *riding*. There are many, many more; but no one semantic domain stands out.

Thus it is that detecting loan words in a vocabulary along with their language of origin (and relative time of adoption) can provide a glimpse into the past of a people. At the very least, these words tell us who was in contact with whom; and sometimes they point to what sort of influence one group has had on another. Such glimpses of the past become especially important for cultures having no recorded history.

A few linguists, in addition to their purely grammatical studies, have begun to examine the vocabularies of British Columbian languages for just this sort of historical information. The speakers of which languages borrowed which words from whom? What historical inferences can be made once these borrowings are discovered and their origins determined?

In this research the linguists are immeasurably assisted by numerous Native elders who are not only fluent speakers of one or more of the indigenous languages but several of whom have become accomplished scholars - colleagues upon whom the non-Native linguists depend greatly![1]

Unfortunately, the task is vast, the time is short, and the number of researchers pathetically small. Ideally, there should be complete dictionaries from every single village because each village has its unique language forms and usages. We will be lucky, however, to get a six or seven thousand word list from one or two people per inhabited reserve because those engaged in this work are so few and none is able to devote full time to the task. Furthermore, several of the languages are nearly extinct; and even for those that are viable, much of the rich dialect differentiation has already disappeared due to various pressures of post-European contact life.

To date, there are insufficient word lists collected and made available to the scholarly community for anyone to endeavor the sort of lexical-historical study envisioned here. Instead, the bulk of this paper explains the principles and concepts linguists use in determining the direction of word borrowing among languages. Following the explanation of principles, a short list of borrowings among three local languages is briefly examined applying the principles where sufficient information permits.

In this discussion numerous language and dialect names appear. The reader should consult the map below.

Principle One: If a word is analyzable in one language but the related term is not analyzable in a second language, speakers of the latter are assumed to have borrowed the word from the former. For example, in Skagit, the northern most dialect of Lushootseed, the word for coho or silver salmon (*Oncorhynchos kisutch*) is ɋə̌čqs. In two varieties of Straits, Lummi and Clallam, coho is also named ɋə̌čqs. Only in Skagit, however, does the word have meaning beyond its reference to that particular salmon. In

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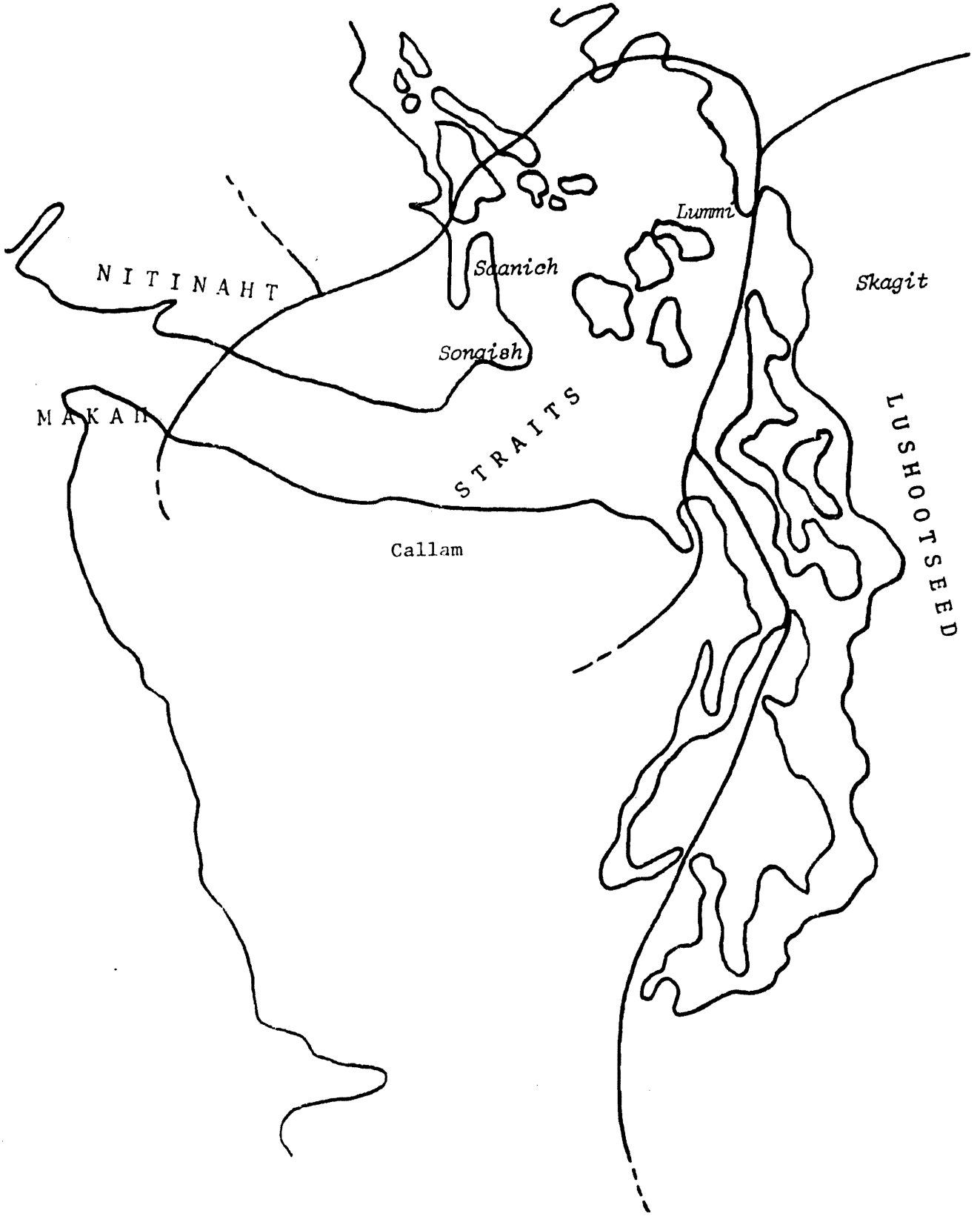
[1] For the progress of my own lexical-historical studies I should like especially to thank the following elders who have patiently given me of their time and knowledge over the years: Mrs. Louise Cisx"isaɬ George, a speaker of Skagit Lushootseed; Mr. Ernie Olsen, a speaker of Saanich Straits; and Mr. John X̌i·sal Thomas, a speaker of Nitinaht.


NITINAHT
MAKAH
Saanich
Songish
Lummi
Skagit
STRAITS
LUSHOOTSEED
Callam

Skagit and other dialects of Lushootseed, ḳə́č means *curve* or *bend* while -qs is a suffix referring to *nose* or *point*. Hence, in Skagit a coho is literally named *bent nose*, describing the appearance of the spawning males. While -qs also occurs throughout Straits with the same meaning as Skagit,[2] the root (or core of the word), ḳə́č does not - apart from this one combination with -qs. Speakers of Lummi and Clallam are typically unaware of the literal meaning of ḳə́čqs while all speakers of Lushootseed are. Therefore, we conclude that the Skagit created the word out of Lushootseed verbal material and the neighboring Straits groups borrowed it.

In northern dialects of Nootka the word for *Caucasian* is mamaɬn̓a. In the neighboring Kwakiutl the equivalent term is mamәɬә. Similarly, further to the east in the Comox language[3] the word for *white man* is mamәɬә. Each of these three words is identical in meaning and almost the same in form. Nootka has an n̓-sound lacking in the other two; otherwise they match perfectly. Clearly all three originate from the same source; but where is that? It is Nootka, for only there can the word[4] be analyzed: ma- means *dwell*, -maɬ *move about*, and -n̓a *at/on the sea*. The first whites to reach these shores came in large ships, houses moving about on the sea; and the Nootka aptly named them for their mode of travel.

On the other hand, in neither Kwakiutl nor Comox can mamәɬә be literally interpreted. It has no meaning to the speakers of these languages beyond the one referent, *Caucasian*.[5]

Principle Two: If the etymon[6] in question occurs in only one language of a particular family of languages, but related words are heard in numerous languages of a neighboring family, the first case is judged to be a borrowing from the second. The word for *lake* in the Wakashan language Kwakiutl and in Coast Salish languages illustrates this principle.

In two dialects of Kwakiutl, Alert Bay and Kingcome Inlet, the word for *lake* is dᶻәl̓aɬ. In the neighboring Salish language, Comox, there is a related term meaning *lake*, θáʔye in Island Comox

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[2] And in nearly every other Salish language as well.

[3] Which subsumes Sliammon and several other dialects on the mainland as well as Comox proper on Vancouver Island. Comox is Salish. The other two are Wakashan.

[4] More precisely if somewhat technically, *etymon* should be used here instead of *word*. There are three words, one in each language; but they are all related - all one etymon.

[5] The historical record also suggests that the Nootka were donors because the whites arrived in Nootka territory first. The Kwakiutl and Comox did not at first know about the whites and their ships except as they heard about them from the Nootka.

[6] See footnote 4.

and **sá?yaɬ** in Sliammon Comox. By studying sound correspondences among Salish languages, linguists know that **θá?ye** and **sá?yaɬ** evolved from an earlier word which was something like ***caƛaɬ**. The relationship between **d^{z}əƛaɬ** and **caƛaɬ** is evident, especially when it is pointed out that the Kwakiutl usually render voiceless sounds (like **c(** as voiced (like **d^{z}**). (Compare English *Peter* with its Kwakiutl pronunciation *Beeda*.)

Once it is established that Kwakiutl **d^{z}əƛaɬ** and Comox **θá?ye/sá?yaɬ** are related, we must try to establish the direction of borrowing. Who borrowed from whom? Words related to **θá?ye/sá?aɬ** turn up in seven other very widely distributed Coast Salish languages extending from Bella Coola in British Columbia all the way south to Tillamook in Oregon. Conversely, related words in Wakashan are limited to **d^{z}əƛaɬ** of Alert Bay and Kingcome Inlet. Nothing like it occurs in other Wakashan languages nor even all the other dialects of Kwakiutl itself.[7] Therefore, we conclude that the Salish, probably the Comox, were the donors in this

Table 1. Table Corresponding to Principle Two.

Salish		Wakashan	
cə́ɬ	Bella Coola		
sá?yaɬ/θá?ye	Comox	**d^{z}əƛaɬ**	some dialects of Kwakiutl
cə́l?aɬ	Sechelt		
cə́ý?əɬ	Clallam		
cáləɬ	Southern Lushootseed		
cáƛɬ	Upper Chehalis		
cá?laɬ	Tillamook		
caƛáɬ	Lillooet		

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[7] So far as currently available data attests.

case.

Principle Three: If two languages are related[8] and they share a common etymon,[9] that etymon is a borrowing in one of the languages if it manifests sounds which otherwise occur only in the second language. This principle is clearly illustrated with the words for *periwinkle* in Nitinaht and some varieties of Nootka.

By means of certain techniques in historical linguistics, scholars have been able to prove that both modern Nitinaht and Nootka evolved from a single ancient language. Furthermore, linguists also have a fairly complete knowledge of the sound system of that ancient tongue. They know that the ancestor language had m and n sounds but no b nor d. It had an x̣-sound but no ḥ.

As the daughter languages evolved from the ancestor speech, speakers of Nitinaht changed the pronunciation of every m to b and every n to d.[10] Speakers of the evolving Nootka retained the nasals but came to substitute ḥ for original x̣. These shifts in

Table 2. Table Corresponding to Principle Three.

Ancestor	Modern Nootka	Modern Nitinaht
m	m	b
n	n	d
x̣	ḥ	x̣

pronunciation are summarized in Table 2.

Therefore, wherever Nootka words have m or n, Nitinaht words have b or d; and wherever Nootka has ḥ Nitinaht has x̣ *except* in cases of borrowing! In modern Nootka the word for *periwinkle* is maḥmu· and, knowing that, one would expect the Nitinaht word to be bax̣bu· on the basis of the above correspondences. However the

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[8] That is, if two languages have evolved out of the same ancient language as did Italian and French from (vulgate) Latin.
[9] Or, less technically, share a common word. See footnote 4.
[10] Note that Nitinaht, as pronounced in the language itself, is di·ti·da?.

expected baχbu· does not exist. The modern Nitinaht word for *periwinkle* sounds just like the Nootka word complete with nasals and ḥ, *viz.*, maḥmu·. Clearly, the Nitinaht speakers gave up their original term for *periwinkle* and adopted the Nootka word.

Principle Four: When a place name is not analyzable in the region where it is found, but is completely understandable to speakers of a nearby dialect or language, the parts that make up the name (its morphemes) are assumed to have been part of the original inhabitants' vocabulary. Either the people who first gave the site its name changed part of their vocabulary or people speaking a different language moved into the area but retained the original place name.

The map of Europe marks many large and famous cities whose names bear testimony to earlier inhabitants of a different native tongue. The German city names Berlin, Leipzig, and Dresden are all originally Slavic words; they indicate the former Slavic habitation of what is now German territory. Similarly, the earlier widespread domain of the Celts is remembered in such city names as London, Paris, and Vienna.

By noting which Makah[11] place names are interpretable by the Makah speakers themselves and which are intelligible only to their southern neighbors, the Quileute,[12] Professor William Jacobsen (1976) has tentatively suggested that the Makah territory along the open ocean is a later expansion from locations on the Strait of Juan de Fuca at the expense of earlier Quileute speaking territory. The scholars Edward Sapir and Morris Swadesh (1939) compiled a glossary of Nootka vocabulary as spoken in the vicinity of Port Alberni. This glossary contains many place names of this region which are Salish rather than Nootkan, indicating again the changing language territories.

It should be noted that the shifting of language boundaries does not necessarily imply the shifting of populations. It was not uncommon for the people of a small village or group of villages to gradually give up their own language in favor of a neighbor's speech - especially if the neighbors were held in high esteem and there was already considerable intermarriage between the two language groups and hence a high degree of bilingualism.

It also happens at times that a people neither moves nor changes languages but does, nevertheless, lose the meaning of one of its own place names. There are several instances of this phenomenon in Lushootseed. For example, in the northern part of the Lushootseed speaking territory there is a village on the shores of a lake named cəlálɬəbš. Everyone knows that -əbš means

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[11] Makah is a Wakashan language spoken in extreme northwest Washington State. It is quite similar to Nitinaht.

[12] Quileute does not belong to the Wakashan language group.

people of, but no one understands the significance of cəlálɨ-. However, over one hundred miles to the south in the most southerly Lushootseed dialects the word for *lake* is cáləɨ. Lushootseed speakers of the southern area fully understand the meaning of cəlálɨəbš, namely, *People of the Lake*, even though it is not their village. (cáləɨ *lake* becomes cəlálɨ- when a suffix is added.[13]) In the north, the original word for lake came to be replaced by a new term, x̣áču?. With the passing of time, cáləɨ was completely forgotten in the north; but the new term, x̣áču?, did not penetrate to the southern region where cáləɨ remained.

Principle Five: When the speakers of one language excel in a particular skill or craft, commonly their neighbors borrow their word for that specialized activity or artifact. Such an outstanding skill is held by the Straits Salish people. They are the reef netters par excellence in the Pacific Northwest.

In some dialects of Straits, Saanich for example, the word for *reef net* is sx̣ʷálə?; and derived from this is sx̣ʷəlí?əɨč *willow tree* or, more literally, *reef net tree* because the branches of willow trees are woven about rocks used as anchors for the nets.[14]

The Southern Lushootseed word for *willow tree*, sc̓ápac, sounds nothing like the Straits term. However, in Northern Lushootseed dialects, the very ones which border on Straits territory, the word for *willow tree* is sx̣ʷálu?ac, which closely resembles Straits sx̣ʷálə?/sx̣ʷəlí?-. (The final -ac in Lushootseed means *tree*.) The Straits people, renowned for their reef netting skill, have provided their nearest Lushootseed neighbors with a word derived from that skill.

Further evidence for the direction of borrowing in this case comes from Principle One. In Straits both parts of sx̣ʷəlí?əɨč, the stem and suffix, are meaningful whereas the speakers of Lushootseed recognize only the suffix -ac in their term sx̣ʷálu?ac. The stem alone is meaningless to them.

A subpoint to the fifth principle concerns artifacts. If an artifact has some feature used by speakers of one language but merely imitated in design but not used by the speakers of a second language, the place of origin for the artifact is probably among the former.

An example of such an artifact is the small projection on the underside of the bow of the canoe type known in English as

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[13] Note related terms listed at the end of the discussion of Principle Two. See also Hess 1977 for a fuller discussion of this phenomenon in Lushootseed.

[14] -əɨč is a suffix meaning *tree*. sx̣ʷəlí?- is a variant of sx̣ʷálə? *reef net* resulting from a change in stressed syllables caused by the addition of a suffix.

Chinook. The Chinook canoe was used for whaling by the three Southern Wakashan groups, the Nootka, Nitinaht, and Makah; and the projection served an important function. When the hunter stood to hurl the harpoon, a rope to steady him looped around his back and under the bow hooking on the projection to keep it in place.

The Salish neighbors along the Straits of Juan de Fuca, Puget Sound, and Hood Canal also used the Chinook canoe. The Salish, however, were not whalers and made no use of the projection; nevertheless their Chinook canoes always had it.

This Salish retention of an unused feature points to the Southern Wakashan as originators of the Chinook canoe and strongly suggests that the Salish were the borrowers. Linguistic evidence of the sort discussed in Principle One confirms the hypothesis. All groups using this canoe share a related name for

Table 3. Table Corresponding to Principle Five.

Canoe name	(Dialect)	Language	Language family
ʔuʔu·taḥ(s)ac	(Ahousaht)	Nootka	Southern Wakashan
ʔuʔu·taẋsc		Nitinaht	
ʔátẋəs	(Sooke)	Northern Straits	Salish
ʔátẋəs	(Songese)		
ʔuʔutẋs		Clallam	
ʔəʔútẋs		Lushootseed	
ʔuʔútẋs		Twana	

this canoe type. Only in the Wakashan languages can the name be analyzed. It consists of a reduplicated root ʔu, the suffix -(a·)t(a)ḥ/-(a·)taẋ meaning *pursue, try to get*, and the suffix -s(a)c meaning *vessel*. The words are not analyzable in any of the Salish languages.

It is ironic that the Salish borrowed both the name for the canoe and the, for them, useless projection on the underside of the bow piece, but did not also adopt one of the Wakashan words for that projection as well. Instead they gave it their own names. Whereas the Ahousaht Nootka call it tu·čma *heart* and the

Makah q̓adado *uvula* (Waterman 1920), the Lushootseed name it bəlálgwəʔ *navel* and the Twana cəbúl̓ *Adam's apple* (Elmendorf 1960).[15] All four words, however, do share a common component, *viz.*, each designates a part of the body.

In lieu of any other criterion, one can resort to the following principle for at least a tenuous hypothesis: if a word has a more general meaning in one language, but the related term has a more narrow or specialized meaning in a second language, the latter is assumed to have been borrowed from the former.

Consider the Japanese words *guroobu*, *batto*, and *sutoraiku*. Each of these is borrowed from English - specifically from *glove*, *bat*, and *strike* respectively; however, in each case the Japanese words are limited in application to the game of baseball.

A similar case is the Lushootseed word t̓əl̓əwáʔs which means *random star* or *unpatterned star* as opposed to sčúsad which designates a *star belonging to a constellation*. The source for t̓əl̓əwáʔs, however, is not ancient Salish speech (as is the case for sčúsad), but rather one of the Wakashan languages, perhaps the Nitinaht t̓a·t̓awaʔsiʔ which means simply *star*. The Lushootseed speakers have added a second *star*-word to their vocabulary limiting the meaning of the ancient native word and taking in the Wakashan term but with a more specialized meaning.

(There is no doubt about the direction of borrowing in this case for words related to the Nitinaht t̓a·tawaʔsiʔ occur in widely dispersed Wakashan languages but in only two Salish languages - Lushootseed and Clallam.[16] See Principle Two.)

With these six principles in mind, it is instructive to attempt their application even though the available word lists are both few and brief. The vocabularies of two Salish languages, Lushootseed and Straits (especially Saanich), are contrasted with the lexicon of a Wakashan language, Nitinaht. (See map.) Related forms shared by either one of the Salish languages with Nitinaht are necessarily borrowings because the languages belong to different families.[17] These particular languages are selected because they are spoken in adjacent territories, and they happen to be the three with which I am most familiar.

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[15] The Ahousaht and Lushootseed terms are from my own fieldnotes. I do not have information about the name of this feature in Nitinaht, Clallam, or Northern Straits.

[16] As far as linguists are presently aware.

[17] Therefore, a pair of related words shared by Nitinaht and Lushootseed or Nitinaht and Straits is not the result of developments from a common parent language spoken long ago.

Thus far, twenty-one borrowings have been found between Nitinaht and one or the other Salish language or both.[18] These are listed and glossed in Table 4 below. All Straits forms are Saanich except where otherwise noted. The Nitinaht words are from Mr. John ʔi·šal Thomas, the Saanich vocabulary is from Mr. Ernie Olsen of Tsartlip Reserve, and the Lushootseed forms come from Hess 1976 and Hess/Hilbert 1980. Information from other sources is credited in footnotes at the end of the table.

At this point, our knowledge of the indigenous vocabularies is usually still too limited to enable us to ascertain precisely from which language out of a group of closely related tongues a word was borrowed. However, in eleven of the twenty-one related sets above we are able to tell whether an etymon originated in Wakashan or Salish. Borrowings numbered 2, 3, 4, 6 and 19 probably entered Salish from Wakashan, while those numbered 5, 7, 9, 10, 11 and 12 probably come to Nitinaht from Salish. Evidence in support of sets 2 through 6 rests upon the fact that the Nitinaht words are analyzable while the Salish words are not, i.e., Principle One, and the distribution of these etyma is widespread in Wakashan but limited in Salish, i.e., Principle Two. Principle Two also applies to set 19 (along with Principle Six in the Lushootseed case).

Evidence for the Salish origin for sets 5 and 9 through 12 rests upon Principle Two. These etyma occur in many Salish languages spoken far beyond the region considered here but are unique to Nitinaht in Wakashan (or limited to Nitinaht and an immediate Wakashan neighbor). Set 7 is analyzable in Salish but not in Nitinaht.

None of the principles can be applied to the remaining sets until more information is learned about them. It should be noted, however, that many of these etyma are very widely distributed in both Salish and Wakashan, and some of these, e.g., 13, 20 and 21 are encountered in other Northwest language families as well.

Most of these twenty-one borrowings fall into three semantic groups, namely, artifacts, small plants, and fauna - especially fish. In part, these groupings probably reflect the accident of elicitation. In particular, vocabularies from the spiritual domain are meagerly represented in the present lexical collections. Terms for social activities are also quite poorly attested (although set 21 is an outstanding exception). As remarked above, much more research is urgently needed.

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[18] This number excludes the many words designating items introduced by European contact which these three languages share from Chinook Jargon.

Table 4. Borrowings Among Nitinaht, Straits and Lushootseed.

English gloss	Nitinaht	Straits[a]	Lushootseed
1. basket	puku?	spčá?	spčú? (Snohomish only)
	cosmetics basket	*cedar-root basket*	*cedar-root basket*
2. basket	ƛ̓apa·t	ƛ̓əpétx̌	
	storage basket for fish	*box hewed from one block*	
3. packbasket	qa?awc	qa?awəc (Clallem)[b]	
4. box	ƛ̓ax̌í·qs	ƛ̓éwəqs (Clallem)[c]	ƛ̓úiqs (Lower Skagit only)
5. shovelnose canoe	ƛ̓ala·ẏ	ƛ̓léy? (Lummi)[c]	ƛ̓əléy?/ƛ̓éləy?
6. Chinook canoe	?u?u·taxsc *whaling canoe*	?átxəs (*Songese*)[d]	?ə?útxs
7. fishknife	k̓ʷičti?d	šk̓ʷíẇəť$^{\theta}$ k̓ʷíť$^{\theta}$ *butcher*	k̓ʷíč(i) *butcher*
8. horsetail *Equisetum telmateia*	ba?ax	mé?əxʷ	bubxəd
9. licorice fern *Polypodium glycyrrhiza*	ƛ̓a?asip	ƛ̓əsíp	
10. soapberry *Shepherdia canadensis*	xu·sim	sxʷésəm	sxʷúsəb/sxʷásəb
11. strawberry	t̓u?ulq	t̓íləqʷ	t̓íləqʷ (Southern only)
12. meat	bi·c	sméyəθ *deer*	biác/báyəc
13. periwinkle	maḥmu·	max̌mu·ẏ(Beecher Bay Clallam)[e]	
14. rat fish	ku·ma	skʷámə?	

Table 4 (continued).

	English gloss	Nitinaht	Straits	Lushootseed
15.	seagull	q"ini·	q"əní	q"ənə́ *how seagulls talk; seagullese*
16.	humpback salmon	hadi?d *freshwater phase*	həneṅ	hədú/hédu
17.	spring salmon	saċup *freshwater phase*		sáċəb (Southern only)
18.	steelhead	qi·waǰ		qíẇǰ (Northern only)
19.	star	ťa·ťawa?si?	ťaťawusna (Clallam)[d]	ťəťəwá?s *random star*
20.	four	bu	ŋás	búus
21.	bone game	lahal	sləhél	sləhál

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[a] Saanich unless otherwise noted.
[b] Fleisher 1976.
[c] Laurence C. Thompson, personal communication.
[d] E. Olsen.
[e] Barry F. Carlson, personal communication.

Of the artifacts, four sets are originally Wakashan, two are Salish and one is undetermined. The Wakashan seem to have influenced their Salish neighbors in the area of containers while canoes are tit for tat. Three plant names are originally Salish and one is undetermined. If more plant names are found to be borrowings and the clear majority remains Salish, there would be some small evidence for Nitinaht expansion at the expense of Salish territory (assuming also a relatively stable distribution of flora over the period in question). Unfortunately, the provenance of fish words cannot be established. Because so many of the borrowings are widely spread in both Salish and Wakashan, they are probably quite old - possibly occurring before the present language distribution. Therefore, they tell us little about contact between the Nitinaht and the two Salish groups.

On the basis of this limited data, it seems that social exchange was not particularly intense between Salish and Wakashan speaking peoples living along the Straits of Juan de Fuca and the waterways to the east. The Straits did not serve to forge a greater link among the groups living here than their linguistic cousins achieved elsewhere.

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GENDER AND NUMBER IN POLISH AND OTHER LANGUAGES: A PRELIMINARY STUDY

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1. INTRODUCTION

Polish is a member of the Slavic branch of the Indo-European language family. Like most Slavic languages, Polish is highly inflected; it formally recognizes the categories person, number, gender and case. In the following I will discuss the Polish gender system, which is attested in nouns, pronouns and adjectives, and in the past tense (past tense forms are historically participles). The Polish gender system has a peculiar feature in that it distinguishes three genders in the singular (masculine, feminine, and neuter), but two in the plural: male persons vs. all other forms. The gender distinctions in the singular do not reflect any natural distinction in the non-linguistic world, but the plural gender distinction does reflect a natural distinction (or at least a distinction that is verifiable in the non-linguistic world). In other words, Polish shifts from a language-internal parameter in the singular to a language-external parameter in the plural. These facts are discussed in sections 2-4 below. In section 5 I will discuss gender and number in some other languages.

A few remarks on Polish orthography and pronunciation are in order: *cz* and *ć* both resemble English 'ch' (as in *church*), but *cz* and *ć* are different from each other both phonemically and phonetically (*cz* being palatal, and *ć* alveolar); *dż* and *dź* are the voiced counterparts of *cz* and *ć* respectively; *sz* and *ś* are the fricative counterparts of *cz* and *ć*, while *ż* and *ź* are the fricative counterparts of *dż* and *dź*; (before vowels other than *i* we write *ci*, *dzi*, *si*, *zi* instead of *ć*, *dź*, *ś*, *ź*; before *i* we write *c*, *dz*, *s*, *z*); when not before *i*, the letter *c* stands for a sound that resembles English 'ts' as in 'kits', while *dz* is the voiced counterpart to *c*; *s* and *z* are as in English, but more dental. The phoneme *ł* is pronounced as a 'dark l' (as in English 'pill'), or as a grooved variant of bilabial 'w' (as in English 'win'); *l* is pronounced as a 'clear l' (as in English 'lip'); *w* is pronounced like 'v' in English 'vixen'. Polish vowels, with broad phonetics, are the following: *a* [a], *e* [ɛ], *y* [ɨ], *i* [i], *o* [ɔ], *u* (written *ó* in some morphemes) [u], *ę* [ɛ̨] (resembling the vowel of French *chien*, and *ą* [ɔ̨] (resembling the vowel of French *bon*). The combination *rz* is pronounced like *ż* between vowels or adjacent to a voiced consonant, but like *sz* elsewhere. The combination *ch* (written *h* in some morphemes) is the velar

fricative [x]. The phoneme *ń* is pronounced like the Spanish *ñ*, while *n* is pronounced like the English 'n', but more dental. The phoneme *j* is pronounced like 'y' in the English 'yes'. Save for a few systematic exceptions, stress always falls on the penultimate syllable. For details on Polish pronunciation see Corbridge-Patkaniowska 1971: 1-7.

2. NOUNS: SINGULAR

Polish nouns distinguish three genders in the singular: masculine, feminine and neuter. As is usual in Indo-European languages, these genders do not reflect natural (sexual) distinctions in the non-linguistic world. For example, the words *mężczyzna* 'man' and *Jagiełło* (a man's name) are feminine. Names of lifeless objects and concepts are divided about equally over the masculine, feminine and neuter categories, rather than being restricted to the neuter category. There are seven cases: nominative, genitive, dative, accusative, instrumental, locative and vocative. For the purposes of this article it is sufficient to consider only the nominative (N) and genitive (G) cases. The most common pattern is as follows: *masculine*: N ends in a consonant, G in *a*; *feminine*: N in *a* (except for male proper nouns in *o*), G in *y*; *neuter*: N in *o*, G in *a*. Examples:

Masculine:

	'sir'	'farmer'	'shoe'
N	*pan*	*chłop*	*but*
G	*pana*	*chłopa*	*buta*

Feminine:

	'socialist'	'voivode'	'woman'	Jagiełło
N	*socjalista*	*wojewoda*	*kobieta*	*Jagiełło*
G	*socjalisty*	*wojewody*	*kobiety*	*Jagiełły*

Neuter:

	'tree'
N	*drzewo*
G	*drzewa*

A number of masculine nouns have *-u*, rather than *-a*, in the genitive (e.g., *las* 'forest' → *lasu* 'of the forest'; see Corbridge-Patkaniowska 1971: 61-62, Damerau 1967: 25-26, and Westfal 1956 for discussions of this matter). For other stems with deviating forms in the nominative and genitive, and for the remaining cases (dative, etc.) see Damerau 1967: 23-48.

3. NOUNS: PLURAL

In the plural we have the following forms: (a) *nominative* masculine and feminine nouns referring to a male person select

-owie or *-i* (distribution unpredictable);[1] masculine and feminine nouns not referring to male persons select *-y*, and neuter nouns select *-a*; and (b) *genitive*: *-ów* for all masculine nouns, plus feminine nouns referring to male persons; feminine nouns not referring to male persons, and neuter nouns, drop the final vowel of the nominative singular to obtain the genitive plural:

Masculine:

	'sirs	'farmers'	'shoes'
N	*panowie*	*chłopi*	*buty*
G	*panów*	*chłopów*	*butów*

Feminine:

	'socialists'	'voivodes'	'women'	Jagiełło's
N	*socjaliści*	*wojewodowie*	*kobiety*	*Jagiełłowie*
G	*socjalistów*	*wojewodów*	*kobiet*	*Jagiełłów*

Neuter:

	'trees'
N	*drzewa*
G	*drzew*

The change *st* → *ść* in *socjalista* → *socjaliści* is regular.

Rather than maintaining the division masculine-feminine-neuter in the presentation of the plural, as is done above (and in a number of grammatical descriptions of Polish), it is far better to recognize only two genders in the plural: 'male persons' vs. 'all others'. Thus we obtain:

Male persons:

	'sirs'	'voivodes'	Jagiełło's	'farmers'	'socialists'
N	*panowie*	*wojewodowie*	*Jagiełłowie*	*chłopi*	*socjaliści*
G	*panów*	*wojewodów*	*Jagiełłów*	*chłopów*	*socjalistów*

Others:

	'shoes'	'women'	'trees'
N	*buty*	*kobiety*	*drzewa*
G	*butów*	*kobiet*	*drzew*

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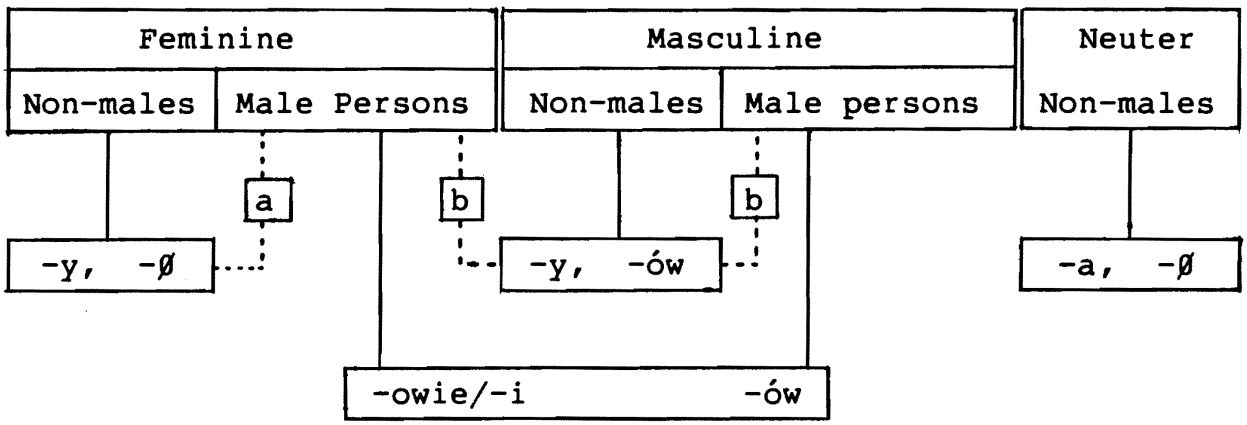
[1] The distribution between *-owie* and *-i* is partially predictable in that *-owie* is quite often used with terms that express a (relatively high) rank or a family relationship; however, there is no complete predictability (for example, *biskup* 'bishop' has the plural form *biskupi*): see Corbridge-Patkaniouwska 1971: 75-76 and Bisko et al. 1966:77 for further information. The ending *-i* has the allomorphs *-e* and *-y* (the latter arises under different morphophonemic conditions than *-y* of the 'non-male' form and should not be confused with the 'non-male' *-y*.)

What we have here is not merely a grammatical shift from three genders in the singular to two genders in the plural, but a cognitive shift as well: from a language-internal classification in the singular, which does not reflect any natural classification, to a language-external classification in the plural, i.e. a classification which reflects a viable way to divide persons and objects in the natural (non-linguistic) world. The division 'male persons' vs. 'all others' is repeated in the plurals of adjectives, pronouns, and past tense forms; see section 4.

There are two exceptions to the assignment of 'male person' forms; the first exception is trivial, the second very insightful: (a) a few feminine nouns referring to male persons have regular feminine forms in both N and G, or in one of these grammatical cases; for example, *mężczyzna* 'man' has *mężczyzni* N ('male person' plural), *mężczyzn* G (feminine plural); *sierota* 'orphan' (which refers only to a male orphan, because adjectives modifying it are in the masculine form; see section 4) has *sieroty* N, *sierot* G (feminine forms); see Damerau 1967: 37 for details; and (b) masculine nouns referring to male persons can select 'non-male' (besides regular 'male person') forms in the plural in order to express a pejorative connotation; usually these cases concern words that already have a pejorative tinge, e.g. *chuligan* 'hooligan' → *chuligany* (besides *chuligani*), *kat* 'henchman, executioner' → *katy* (besides *kaci*, with the regular change *t* → *c*); see Damerau 1967: 29, and note also *żyd* 'Jew' → *żydzi* 'Jews' (with the regular change *d* → *dz* in the 'male person form') vs. *żydy* 'kikes'; feminine pejorative nouns referring to male persons select only the 'non-male' forms, e.g. *gaduła* 'chatterbox, wind-bag' → *gaduły*, *niezdara* 'duffer, oaf' → *niezdary* (see Damerau 1967: 37).

The plural formations of nouns may be summed up as follows (unbroken lines indicate regular forms, dotted lines indicate exceptions):



(a) non-pejorative (irregular exceptions to 'male person' plurals); and (b) pejorative forms.

4. ADJECTIVES, PRONOUNS AND PAST TENSE FORMS

The division 'male persons' vs. 'non-males', which is found in the plural of Polish nouns, is even more evident in the plurals of adjectives, pronouns and past tense forms (the latter are historically participles, with gender indication). Whereas plural nouns distinguish *-y* vs. *-a* nominative forms and *-ów* vs. *Ø* genitive forms in the 'non-male' category, and *-owie* vs. *-i* nominative forms in the 'male person' category, we only have 'male persons' vs. 'non-males' (without further subdivisions) in the plurals of adjectives, pronouns and past tenses. (The singular of adjectives, pronouns and past tense forms distinguishes the three traditional genders.) Examples:

'new':	Singular:		Masculine	Neuter	Feminine
		N	nowy	nowe	nowa
		G	nowego		nowej
	Plural:		Male persons	Non-males	
		N	nowi	nowe	
		G	nowych		

'this'	Singular:		Masculine	Neuter	Feminine
		N	ten	to	ta
		G	tego		tej
	Plural:		Male persons	Non-males	
		N	ci	te	
		G	tych		

'was'	Singular:	Masculine	Neuter	Feminine
		był	było	była
	Plural:	Male persons	Non-males	
		byli	były	

(Past tense forms do not distinguish cases.)

Masculine singular forms of adjectives, pronouns and past tenses are used with (1) all nouns (masculine or feminine) that refer to a male person, and (2) all masculine nouns that do not refer to a male person. In all other cases the gender of the noun determines whether the adjective, pronoun, or past tense form is feminine or neuter. Examples:

(a) *ten dobry pan* 'this good (dobr-) gentleman'
(b) *ten biedny sierota* 'this poor (biedn-) orphan'
(c) *ta dobra kobieta* 'this good woman'

(d) *to dobre drzewo* 'this good tree'

In the plural, 'male person' forms of adjectives, pronouns, and past tenses are used when the head of the construction refers to a number of male persons, or to at least one male person plus other persons. When the head makes no reference to any male person, 'non-male' forms are used. Examples:

(e) *ci ciekawi panowie* 'these curious (*ciekaw-*) gentlemen'
(f) *te ciekawe kobiety* 'these curious women'
(g) *te nowe buty* 'these new shoes'
(h) *panowie byli ciekawi* 'the gentlemen were curious'
(i) *Adam i Jan byli ciekawi* 'Adam and John were curious'
(j) *Adam i Ewa byli ciekawi* 'Adam and Eve were curious'
(k) *kobiety były ciekawe* 'the women were curious'
(l) *Ewa i Agata były ciekawe* 'Eve and Agatha were curious'

Note also:

(m) *państwo byli ciekawi* 'the ladies and gentlemen were curious'

(although *państwo* 'ladies and gentlemen' is formally a neuter singular noun).

For details on constructions employing plural nouns and adjectives, pronouns and past tenses see Bisko *et al.* 1966: 78-80, 228-230; Corbridge-Patkaniowska 1977: 77; and Damerau 1967: 57.

5. CONCLUSIONS AND IMPLICATIONS FOR OTHER LANGUAGES

The grammatical and cognitive aspects of Polish singular and plural genders have two implications for the study of gender and number in other languages; (1) the reduction of three singular genders to two plural genders in Polish could be parallelled by similar reductions in other languages; and (2) languages apparently do not enjoy complete liberty in the way they classify the outside (non-linguistic) world; rather, they must in some form recognize divisions that do occur in the outside world.

As for the first point, i.e. reduction of genders in the plural, it seems that most Indo-European languages either maintain the formal and classificatory complexity of the singular, or they simplify matters. (It is possible that plurality itself is felt to be a complicating factor, to be compensated for by simplifying matters elsewhere.) For example, Spanish definite articles distinguish two genders (feminine vs. masculine) in the singular and plural, and a third number (collective) which does not distinguish feminine from masculine. (The third number is employed only by adjectives and possessive

pronouns, plus a few other forms.)[2] Hence we have:

	Singular	Plural	Collective
Feminine	*la casa* 'the house' *la mia* 'my X'	*las casas* 'the houses' *las mias* 'my X-es'	*lo mio* '(that which is) mine'
Masculine	*el libro* 'the book' *el mio* 'my X'	*los libros* 'the books' *los mios* 'my X-es'	

Hence in Spanish the situation is equally complex in the singular and plural, but simplified in the collective number.

French articles distinguish two genders in the singular (feminine vs. non-feminine), but they indicate only one gender in the plural:

	Singular	Plural
Feminine	*la maison* 'the house'	*les maisons* 'the houses'
Non-feminine	*le jardin* 'the garden'	*les jardins* 'the gardens'

Dutch and German reduce their gender systems from two and three respectively in the singular to one in the plural. The following are examples of Dutch, which has *-en* and *-s* (in

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[2] The adjectives and possessive pronouns that occur with *lo* are always formally identical to singular masculine forms (which means that Spanish distinguishes only two genders and numbers - masculine and feminine, and singular and plural - outside the system of definite articles). The article *lo* is in some grammars described as a neutral article, implying that Spanish has three genders. I do not agree with that analysis, but this is not the place to pursue this matter. For further information on Spanish genders see Bello and Cuervo 19(??): 419-420, Calvert 1974: 10-12, Mason 1967: 212, and Scarlyn Wilson 1973; 26-28.

unpredictable distribution) as plural markers:[3]

	Singular	Plural
Neuter	*het land* 'the land' *het station* 'the station'	*de landen* 'the lands, countries' *de stations* 'the stations'
Non-neuter	*de man* 'the man' *de jongen* 'the boy'	*de mannen* 'the men' *de jongens* 'the boys'

The following are examples of German:[4]

	Singular	Plural
Feminine	*die Frau* 'the lady, woman'	*die Frauen* 'the ladies, women'
Masculine	*der Herr* 'the gentleman'	*die Herren* 'the gentlemen'
Neuter	*das Bett* 'the bed'	*die Betten* 'the beds'

In Chinook, a non-Indo-European language, we have two genders in the singular of the pronominal system ('feminine' vs. 'non-feminine'), but one single gender in the non-singular numbers (viz. partitive, dual, plural). See Silverstein 1972: 396-400 (section 3.7).

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[3] Dutch also has an unproductive plural ending *-eren* which is limited to a few neuter nouns (for example, *het kind* 'the child' → *de kinderen* 'the children'). For details on Dutch plural formation see Van Haeringen 1979: 19-38.

[4] German plural formation is very complex, as it employs other endings besides *-en* (e.g., *-er*, *-e*, with or without umlaut of the stem). Certain nouns form their plurals only by applying umlaut. There is no predictability on the basis of singular gender as to what plural device a noun will employ.

As for point (2) above, the observation has been made that languages enjoy a large measure of freedom in the way they classify and describe the outside (non-linguistic) world, and that human beings are strongly influenced in their perception of the world by the language they speak: see, e.g., Hjelmslev 1970: 96-112, especially 104 (in this connection see also Lepschy 1972: 70-71); Whorf 1976: 112-124, 134-159; and Sapir (as quoted in Whorf 1976: 134). However, the case of the Polish plural vs. the Polish singular shows us that a language occasionally 'corrects' its own classification systems when these get too much out of sync with the natural organization of the non-linguistic world.[5] Remarkably, this 'correction' seems to take place largely outside the awareness of the speakers.[6] (Most speakers of Polish are probably not aware of the fact that *-owie/-i* vs. the other endings mirrors a distinction in the non-linguistic world, although they are of course aware of the existence of male persons besides all other beings; on the other hand, the pun-like nature of 'non-male' forms for male persons hints at some subconscious awareness of the function of the 'non-male' vs. 'male person' forms - see the end of section 3; note also the use of masculine forms of adjectives, pronouns and past tenses in combination with feminine nouns referring to male persons - see section 4.) It is the task of linguistics to find out (1) to what degree a language can use classification systems to describe the outside world without these systems corresponding to any natural division in the outside world, and at what point 'corrective measures' are taken by a certain language to restore the balance between that language and the world, and (2) to what degree speakers are aware of the mechanics mentioned under (1),

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[5] In this connection, one might also mention the case of diminutives in Dutch and German. As is shown in the main text of section 5, Dutch has two genders (neuter and non-neuter), while German has three (neuter, masculine and feminine). With regard to terms for animate beings, neuter terms in both languages usually refer to the young or immature of a species, as in German *der Mann* 'the man', *die Frau* 'the lady, woman', and *das Kind* 'the child'. This system falls apart when applied to terms for inanimate objects or concepts, which are unpredictably masculine, feminine or neuter, as in *der Fluss* 'the river' (masculine), *die See* 'the lake' (feminine), and *das Meer* 'the sea' (neuter). However, Dutch and German diminutive terms are all neuter, which re-establishes the neuter category as the receptacle of immature or small beings. The following are examples from German, where diminutives are formed with the suffix *-chen*, which requires umlaut in some stems: *das Männchen* the little man', *das Kindchen* 'the little child', and *das Flüsschen* 'the little river'.

[6] Most speakers of Dutch are not aware of the fact that non-neuter nouns shift to the neuter category when they are diminutivized. I presume that this holds true for German speakers as well.

and to what degree their awareness (if any!) influences these mechanics.

In summation, it seems reasonable to say that the study of any language (or of language in general) should not limit itself to the formal aspects of that language, but should also study the semantic and psycholinguistic aspects of the structure of that language. Such an integrated view of the formal, semantic and psycholinguistic aspects of language could be labelled 'cognitive linguistics'.

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PRAGMATIC CONSTRUCTIONS AND UNBOUNDED DEPENDENCIES IN JAPANESE[1]

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1. INTRODUCTION

This paper is an attempt to analyze 'Double Nominative Constructions' (DNC, henceforth), 'Double Object Constructions' (DOC), Topic Constructions, and Relative Constructions in Japanese. It will be shown that these constructions are generated by the same rules and are of unbounded dependencies. It will also be claimed that there are two different kinds of particles involved with the DNC and the DOC respectively and that different types of structures are contingent upon the double (or multiple) appearance of 'ga' and 'o'. In Section 1, the argument will begin by examining the DNC. The nature of the problem involving the DNC will be presented along with related data and the analyses of previous authors will be briefly discussed. Section 2 will be devoted to the preliminary work for a GPSG analysis. In section 3, a solution will be put forth within the GPSG framework. The analysis proposed in this paper, unlike previous ones reviewed, claims that each of these four constructions is not an isolated phenomenon but an output of general rules which extract NP out of X^2.

1.1 The nature of the problem

In Japanese, the subject of a sentence is considered to be marked by the postpositional particle 'ga'. It is not clear, however, whether every NP marked by 'ga' is a subject or not, since we can find apparent non-subjects being marked by 'ga' and some simplex sentences contain more than one 'NP-ga'. The DNC has been a thorny problem to Japanese transformationalists since their framework requires that there be only one subject NP in a simplex sentence. The same problem arises when we apply the GPSG model to the sentence structure of Japanese, since feature conventions and PS rules, as formulated in Gazdar *et al.* (1985)

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[1] This paper is a revised version of 'Double Nominative Constructions in Japanese' which was originally submitted to Henry J. Warkentyne. I am indebted to Thomas E. Hukari for the formal treatment of the data and to Henry J. Warkentyne and Yasu-Hiko Tohsaku for valuable comments and encouragement. My thanks also go to Miyamoto Tadao, who was a good informant. However, all the shortcomings are mine.

(GKPS, hereafter), label ordinary simplex sentences as well-formed if one and only one [+SUBJ] feature appears on the tree.

1.2 Different types of DNC

There are different types of DNC and any treatment of them should be able to account for the following data. The heading for each type is merely mnemonic.

(1) NP-POSS NP

a. Zo ga hana ga nagai.
elephant SM nose SM is-long (SM: subject marker)

'It is the elephant whose trunk is long.'

b. Ano gakusei ga otosan ga yumei da.
that student father famous-is

'It is that student whose father is famous.'

The above 'NP ga NP ga' can be alternatively expressed in 'NP-no NP-ga' (cf no: possessive marker).

(2) NP-OBLIQUE CASE MARKER

a. Kono mura ga takusan hito ga kuru.
this village many people come

'It is (into/from) this village that many people come.'

b. Koko ga Fuji san ga yoku mie-ru.
this place Mt. well is-seen

'It is (from) this place that Mt. Fuji is seen easily.'

For the sentences in (2) the unmarked forms are 'NP + OBLIQUE POSTPOSITION' as in 'Fujisan ga koko kara yoku mieru.'

The verbs illustrated in (3) and (4) are grouped together, since they share some syntactic features : the initial NP can be converted into NP-NI (Dative Marker), and the NP-NI appears to be a trigger of honorific expressions and reflexives.

(3) NP-SM NP-SM VERBS OF POSSESSION, DESIRE, COMPETENCE, ...

a. Boku ga kodomo ga aru.
I child have

'I have children.'

b. Watasi ga kokyo no machi ga koisii.
home of town be-homesick-for

'It is I that miss my hometown.'

c. Watasi ga okane ga hosii.

'I want money.'

d. John ga/*ni sugaku ga suki-da.

'John likes math.'

e. Mary ga otoosan ga kowai.
father fearful/fearsome

'Mary is afraid of her father.'

f. Anata wa/ni nihongo ga wakarimasu ka?
you Japanese understand QUES

'Do you understand Japanese?'

g. Dare ga/ni kokuban no zi ga mienai ka?
blackboard 's letter visible QUES

'Who cannot see the letters on the blackboard?'

h. Dare ga/ni nihongo ga dekiru ka?
who Japanese can(do)

'Who can (speak) Japanese?'

(4) NP-SM NP-SM verb + 'tai'/'reru' ('-want'/ '-can')

a. Boku ga osusi ga/o tabe-tai.
I sushi eat want

'I am anxious to eat sushi.'

b. Boku ga eiga o/ga mi-tai.
movie see want

'I want to see a movie.'

There are several different analyses of the DNC in Japanese. The analyses proposed by Kuno (1973), Tonoike (1975-76), Shibatani and Cotton (1976), and Hoji (1980) are briefly examined. First, Kuno's analysis comprises three different rules: Subjectivization, Ga/Ni Conversion, and Ga for Object

Marking. Subjectivization takes non-subject NPs and transforms them into "Subject". This rule is intended to cover the particle variation of the DNC in the following data.

(5) a. Zo no hana ga nagai.
elephant POSS nose SM is-long

b. Zo ga hana ga nagai. (= 1a)

c. Fuji san ga koko kara yoku mie-ru.

d. Koko ga Fuji san ga yoku mie-ru. (= 2b)

'Ga/Ni Conversion' and 'Ga for Object Marking' are related to stative verbal constructions as shown in (6):

(6) a. Boku ni kodomo ga aru.

'I have kids.'

b. Boku ga kodomo ga aru. (= 3a)

c. Dare ni nihongo ga dekiru ka?

'Who can (speak) Japanese?'

d. Dare ga nihongo ga dekiru ka? (= 3h)

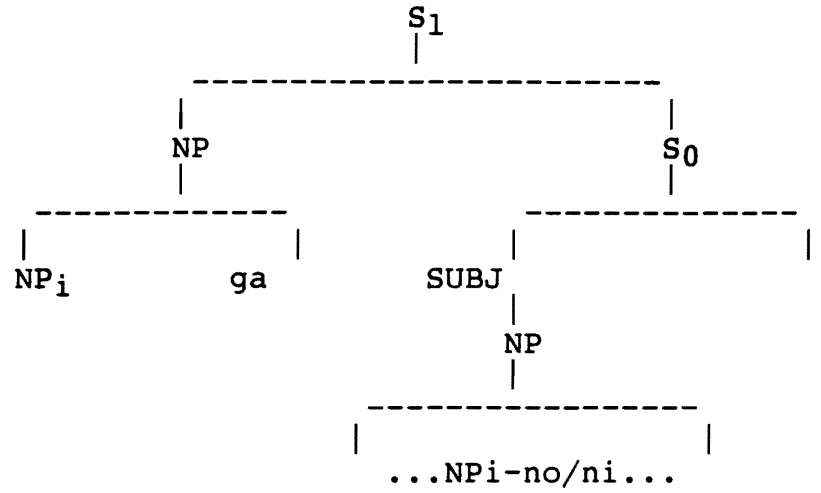
In (6b) and (6a), for example, 'Ga/Ni conversion' takes 'Boku ga', and converts it into 'Boku ni'. 'Ga for Object Marking' assigns an object status to 'kodomo' and marks it with 'ga' if the verbals are 'stative'. The shortcomings of Kuno's analysis are largely due to the 'Subjectivization' rule which changes non-subjects into subjects. The presence of two subjects makes some phenomena concerning subjects inconsistent. This transformation turns out to be incompatible with 'honorification' and 'reflexivization', which are controlled by subjects. That is, the two subjects on the surface are the source of the problem. Another deficit is that the first NP-ga in (6b) is base-generated, contrary to native speakers' intuition, which recognizes the NP as a marked form. There is still another problem, i.e., 'idiosyncratic' constructions which do not undergo the 'Ga/Ni conversion' as in (3d) (cf. Kuno 1973: 89).

Tonoike (1975-76) takes the opposite direction of Kuno in dealing with 'stative' verbal constructions and relieves himself of the 'idiosyncrasy' controversy. That is, he applies a 'Ni to Ga' rule to these constructions, which has the same effect as Kuno's 'Subjectivization'. Thus, (3d) is not problematic any more. However, Tonoike has to base-generate the NP-ni

separately, and apply the 'Ni to Ga' rule to the 'NP-ni Np-ga V' pattern. The same criticism which was directed at Kuno also applies to Tonoike since Tonoike's rule also introduces a separate subject into a sentence which already has one. There are still other problems with respect to agreement since Tonoike's treatment presupposes that NP-ni is not a subject in the stative verbal construction. On the contrary, Np-ni acts like a subject in this construction.

Shibatani and Cotton (1976) (S & C, henceforth) and Hoji (1980) propose a similar analysis along the following lines:

(7) S & C (1976: 276)



(8) Hoji (1980: 42)

(i) NP-ga NP-ga V , where V is subcategorized for two NP-ga's

(ii) NP-ga [S] , where 'ga' is subcategorized so as to select NP and S.

S & C base-generate every construction involving a DNC (four of them, which are found in (5) and (6)), whereas Hoji reduces the number to two. One of the common shortcomings of the two analyses is simply that there are many counterexamples as illustrated in (9):

(9) a. Boku(ni) GA Fuji-san wa koko(kara) GA yoku mieru.
I to Mt. here well is-seen

'It is by me that Mt. Fuji is easily seen from here.'

b. Bunmeikoku GA dansei GA heikinzyumyoo GA mizikai.
civilized country man average lifespan is-short

'It is (in) the civilized countries that, as for men, their average life span is short.'

These examples reveal only a portion of the hidden defects of the movement (or lexical) analysis which resembles the ones illustrated in (7) and (8). Their analyses ignore the sentence-medial GAs found in (9). (Also see (14) and (24).) Furthermore, the base-generation of NP-ga NP-ga V by Hoji (and by S & C in some sense) is not matched with any other independent motivation in Japanese syntax, and it is also incompatible with native speakers' intuition as pointed out previously in the discussion of Kuno's analysis.

2. A PROPOSAL FROM A GPSG POINT OF VIEW

In this section, a formal approach to the DNC, the DOC, Topic Constructions, and relative clauses will be attempted within the GPSG framework. It will be shown that these constructions are very similar to one another and can be covered by the same rules. I will also suggest that "Anti-Foot Features" be postulated as syntactic features in Japanese. I will assume with GKPS that an argument NP is a possible controller in control-agreement, and that control relations, whether they are local or non-local, can be accounted for by a well-formed condition on each local tree.[2] It will also be assumed, as it has been by previous authors, that honorifics and reflexives are triggered by the subject of a sentence.[3]

2.1 Preliminaries

The GPSG framework as formulated in GKPS consists of several components: Immediate Dominance (ID) rules, Linear Precedence

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[2] The candidate for a controller is an argument NP, or a displaced NP if it is introduced by the ID rule. See GKPS 85-89.

[3] The following sort of Subject Honorific Agreement Principle (SHAP) is assumed:

SHAP: if there exists a X[-N][+hon], there must exist a sister NP[p][+HON] such that p is the value of CM and the following algorithm obtains:
(i) If [HON] ε $DOM^{+}(H)$, then $C_o(HON) = H(HON)$, or
(ii) otherwise, $C_o(HON) = U\ C_i(HON)$,
where nouns are classified into N[+HON], N[-HON], and N[¬[HON]]. (¬ : undefined)
N[+HON]:terms for persons who have a higher position in the family, kinship hierarchy or in the societal strata.
N[-HON]: terms for animals and most inanimate things.
N[˜[HON]]: body parts, writings, pictures, etc.

(LP) rules, Metarules, Feature Cooccurrence Restrictions (FCR), and Feature Specification Defaults (FSD) (GKPS: 104). Basic sentence patterns are sanctioned by ID rules and LP rules. ID rules, if we ignore the projection function, are considered to be the same as the traditional PS rules except that linear order among constituents is missing. LP rules regulate the linear order among daughter nodes of a local tree. A Metarule is a kind of redundancy elimination mechanism which captures the relationship that holds among surface syntactic variants. All the rules are based on surface only. Passive forms, for instance, are generated by the metarule which operates on the active counterpart:

Passive Metarule (GKPS: 59)

VP ---> W , NP

⇓

VP[PAS] ---> W , (PP[by])

FCR and FSD will be introduced later. The rest of this section will be devoted to the formulation of ID rules, LP rules, relevant syntactic categories, and syntactic features in Japanese.

As I am not aware of any previous work in Japanese which deals with basic PS rules within the GPSG framework, the following is based on some of my empirical observations of various Japanese sentence structures.[4] In the following, the small letters will represent underdefined lexical categories, and the large letters, underdefined categories of both lexical and phrasal levels.

Non-lexical ID rules:

1. $S \rightarrow X^{2[P]}_{[+N]}\ H[-SUBJ]$

2. $Y^2 \rightarrow X^{2[P]}\ \ Y^{2/X2}$

3. VP --->XP[+ADV], H

4. NP ---> XP[P], H

...

---

[4] I am aware of Gunji's work (1983), which is more on the semantics side. His work concentrates on semantic control.

Lexical ID rules:

X^2 ---> H, {<P, a>} where P ε { CM,Pn,Pv,DM } U
{ a| a = value of P }.

VP ---> H[1]

VP ---> H[2], NP

VP ---> H[3], NP[ga]

VP ---> H[4], NP[ni], NP

VP ---> H[5], NP, NP[Pn]

VP ---> H[6], NP[Pn]

VP ---> H[7], VP[Pv]
[AUX]

...

VP ---> H[i+1], NP[ni], VP

...

LP rules:

1. ~[SUBCAT] < [SUBCAT]

2. ~H < H

3. [+N][P] < [-N]

Syntactic Features:

features	*value range*	
N	+,-	
BAR	o, 1, 2	
SUBCAT	{ 1,2, ... n } U { CM, Pn, Pv, DM }	
NFORM	CM, Pn, DM.	*CM=Case Marker Pn=noun postposition Pv=verb postposition DM=Discourse Particle
SUBJ	+, -	
ADV	+, -	
SLASH	category	
CM AGR	NFORM	

HON	+, -
hon	+, -
nom	+, -
acc	+, -
dat	+, -
gen	+, -
CM	ga, no, o, ni
DM	wa, ga, o
Pn	kara, ni, de, e, made, ...
Pv	to, yoo-ni (=COMP) (See footnote 5.)

Syntactic Categories:

S[Pv] = [<N, ->, <BAR, 2>, <SUBJ, +>,<Pv, x>, ...]

VP[Pv]= [<N, ->, <BAR, 2>, <SUBJ, ->,<Pv, x>, ...]

NP[CM] = [<N, +>, <BAR,2>, <CM, x>, ...]

NP[Pn] = [<N,+>, <BAR, 2>, <Pn, x>, ...]

S = [<N, ->, <BAR, 2>, <SUBJ, +> ...] (=V^2[+SUBJ])

VP = [<N, ->, <BAR, 2>, <SUBJ, -> ...]

NP = [<N, +>, <BAR, 2>, [p], ...]

ga = [<nom, +>, <BAR, 0>]
or [<focus, +>,<nom, +>, <BAR, 0>]

o = [<acc, +>, <BAR, 0>]
or [<focus, +>,<acc, +>, <BAR, 0>]

no = [<gen ->, <BAR, 0>]

ni = [<nom, +>, <dat, +>], or [<acc, +>, <dat, +>]

wa = [<topic, +>, <BAR,0>]

kara = [[kara], <BAR, 0>] 'from'

...

Head Features = stative, hon, AGR, HON, AUX,...

Foot Features = SLASH, HON,

Anti-Foot Features = p, AUX, stative, where p = Value of P.
(See footnote 6.)

Feature Cooccurrence Restrictions:

FCR 1: DM[+focus][+nom] > ¬[acc]

FCR 2: [[+stative] [BAR2]] > CM AGR [ni]

FCR 3: [+null] > SLASH

FCR 4: ¬[P] > H

FCR 5: H[BAR 2] > ¬[P]

FCR 6: ¬[BAR 1][P]

FCR 7: $V^{2[+SUBJ]}$ > ¬[stative], ¬[AUX], ¬[hon],

FCR 8: [stative] U [AUX] > [-N]

FCR 9: [+stative][+AUX][BAR 0] > CM AGR[NForm[AGR[CM[ga V o]

FCR 10: DM[+focus,+acc] > ¬[nom]

FCR 11: [p] > [+N]

Feature Specification Defaults:

FSD 1: [-hon]

FSD 2: VP[CM AGR [ga]]

FSD 3: V [CM AGR [o]]

FSD 4: XP[¬[P]]

FSD 5: [-stative]

One of the breakthroughs developed in GKPS is on the notion of the syntactic category. Syntactic categories are considered to be a bundle of feature and feature value pairs, i.e., <feature, feature value>. A random choice of features and corresponding values may serve as a syntactic category if it constitutes the UNIFICATION of features. It should be also noted that case

markers are not treated as a primitive category, but as an analyzable unit consisting of features.[5, 6]

2.2 Pragmatic constructions

2.2.1 Two types of DNC

The DNC can be divided into two types according to the conditioning factors: one is structure-dependent and the other is verbal-dependent. The DNC in (1) and (2) are predictable from the syntactic structure and may as well be labelled as the S-DNC. The other is sanctioned by the presence of a certain class of verbals. Thus, the latter will be called the V-DNC.

This section will concentrate on the S-DNC only. As can be seen from the sentences in (1) and (2), possessive and oblique case markers are replaced by GA. This GA, apparently, is not a subject marker since there exists a more plausible subject marker in the same sentence. Considering the existence of the topic marker WA, I will conjecture that GA is a kind of discourse particle which has a focusing function.[7] Thus, possessive and oblique case markers are replaced by the discourse particle GA[+focus, +nom], through the following procedure.

---

[5] Verbal infixes which are inserted before AUX are not included in Pv(=COMP), since they play no distinctive role in Japanese syntax. The definition of Pv is restricted as such, since Pv has the power of bringing the sentential complement into scrambling phenomena whereas infixes do not.

[6] Anti-Foot Features act in the opposite way that Foot Features do, i.e., the feature of the mother percolates down to each of the daughter nodes of the same major syntactic features. The motivation for this feature originates from the fact that the adnominal NPs in the domain of subjects and objects act in the same way as their head NPs respectively with regard to 'CASE'. This will become clear in the ensuing sections.

[7] I assume that 'ga' is not only a subject marker but also a focusing device which may be equivalent to sentential stress, 'It--that--'construction, passive construction, etc. of English. See Martin (1983) and Bloch (1946) for GA as an 'emphatic subject' marker, and Kuno (1973) for the 'exhaustive listing' property of GA. Further studies are needed on the side of pragmatics as to the discourse function of 'GA'. I am assuming "isomorphism" between 'Focus Construction' and 'Topic Construction'. Capital letters will be used to indicate the identity as a discourse marker.

(10) Focusing Metarule (First Approximation)

V^2 ---> N^2, W

V^2 ---> $N^{2/N2}$, $N^{2[DM[+foc,]]}$, W,

where W={{possible daughter nodes of V^2}-{defined categories}}.

This rule is intended to say that the adnominal NPs as well as head NPs are discharged from within N^2, pick up DM[GA], and attach to the [V] axis at the same time. The motivation for this movement analysis is related to the fact that adnominal NPs, which are not scrambled when they are marked by a POSS marker, can participate in the scrambling phenomenon when they are followed by GA, as shown in (11) (also see the scrambling rule in the last section):

(11) a. Zo no hana ga nagai.

b.*Hana ga zo no nagai.

c. Hana GA zo ga nagai.(=1a)

d. Zo ga hana GA nagai.

e. Ano toki John no kao ga akakatta.
that time face was-red

'At that time John's face was red.'

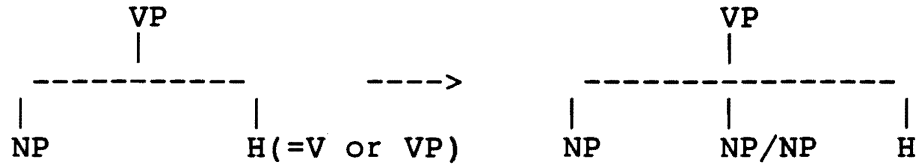
f.*Ano toki kao ga John no akakatta.

g. John GA ano toki kao ga akakatta.

h. Kao ga ano toki John ga okkatta.

The other motivation for the movement analysis is involved with unbounded dependencies, which will be introduced later along with a more general formulation of the Focusing Metarule. (11) reveals that a simple replacement of 'no' with GA is not enough of a solution. S & C (1976) and Hoji (1980), as was pointed out, account for only the subset of the DNC. Rule (10), in contrast, is compatible with all the above examples since the head NP as well as POSS-NP can, vacuously or unvacuously, be replaced from the original position to V-axis, being marked by GA at the same time. The structural change which rule (10) brings in is illustrated in (10').

(10')



There are some cases of overgeneration such as (12). That is, rule (10) incorrectly applies to NPs within the minimal VP. This situation is taken care of by FCR in the GPSG framework. FCR 1 (DM[+focus] > ¬[acc]) is formulated to block the generation cases in (12).

(12) a. *Okasi ga haha ga kodomo ni]e" watasi-ta.
sweets mother child to give PAST

'It is sweets that the mother gave to the child.'

b. *Kodomo ga haha ga]e" okasi o watasi-ta.

'It is (to) the child that the mother gave sweets.'

Note that control-agreement involving honorifics and reflexives which were problematic with Kuno and Tonoike is not troublesome any more in this analysis, since the displaced NP is not marked by CM but by DM which is irrelevant with the agreement problem. (See footnote 3 for 'SHAP' in this section.)

2.2.2 S-DNC and Topic Construction

If we substitute WA for GA in the rule 10, then what we call 'Topic Constructions' (TOPC) will be obtained without any additional provision. Rule 10 will be generalized as is shown in (13):

(13) Pragmatics Metarule (Second Approximation)

V^2 ---> N^2, W

⇓

V^2 ---> $N^{2/N2}$, $N^{2[DM]}$, W (W: as defined in (10))

Unlike the S-DNC, the TOPC is not constrained by any FCR. It seems natural that similar pragmatic constructions are generated by the same rule. Rule 13 will cover all the instances of the S-DNCs and TOPCs in (14).

(14) a. Koko GA Fuji-san ga boku ni yoku mieru.

b. Boku wa Fuji-san ga koko GA yoku mieru.

c. Boku GA Fuji-san ga koko GA yoku mieru.

e. Koko wa Fuji-san wa Boku wa yoku mieru.

f. Fuji-san wa boku wa koko ga yoku mieru.

...

All the 48 possible sentences in (14) are generated by the single rule (13). No previous analysis has ever come close to attaining this power. There are, however, some other data which cannot be grasped by (13). As is shown in (15), there are cases where a certain constituent of the subordinate clause appears, being marked by DM, in the domain of the main clause and the missing slot is either empty or filled with resumptive elements. That is, unbounded dependency constructions (UDC) are also involved with discourse particles. The following examples are the cases where NP is extracted out of S, being marked by DM.

(15) a. John wa boku ga [(kare no) otosan ga yumei] to
I S HE father is-famous COMP

omota.
thought

'As for John, I thought that (his) father was famous.'

b. John GA boku wa [(kare no) otsan ga yumei] to omota.
S
'It is John whose father, I thought, was famous.'

c. Koko kara GA/wa boku ga [Fuji-san ga __ yoku mieru]
S
to omota.

lit. 'It is this place from which/As for this place, I thought Mt. Fuji is easily seen.'

Furthermore, there are a set of interesting examples which show the same type of displacement from $V^{2}[-SUBJ]$:

(16) a. Sono hon wa [boku ga Mary ni [__ kau] yoo-ni
that book S I to VP buy VP COMP

sumumeta.]
advised S

'As for that book, I advised Mary to buy (it).'

b. Boku wa sono hon wa Mary ni [__ kau] yoo-ni
VP VP COMP
sumumeta.

lit.'As for me, concerning that book, I advised Mary to buy (it).'

The examples in (15) and (16) can be generated by a rule like (17). The presence of (16) gives symmetry to the extraction rule which would otherwise be stilted and could not cover relative constructions, as will be shown later, with one ID rule.

(17) Extraction Metarule

V^2 ---> W

⇓

V^2 ---> $X^{2[DM]}$, H/X^2

This formulation is essentially the same as the English counterpart which is "S ---> X^2, H/X^2". A slight change from S to V^2 enables us to account for the extraction from both $V^{2[+SUBJ]}$ and $V^{2[-SUBJ]}$.

At this point we might as well turn our attention to what is called "Double Object Constructions" (DOC). The DOC is also characterized by the double appearance of same case markers, i.e., 'o' in this case. The problem involving the DOC is very similar to the DNC. However, this construction has not been a popular topic among Japanese transformational linguists for good reasons. Now, we may take a further step and see if there is a syntactic or pragmatic device which focuses NPs within the minimal VP in Japanese. The following examples are very revealing in this respect:

(18) a. John ga Mary no kao o butta.
face OM hit OM:Object Marker
'John hit Mary's face.'

b. John ga Mary o kao o butta.
'It is Mary whose face John hit.'

c. Mary o [John wa __ kao o butta.]
S

d. John ga Mary ni hon o watasita.
to book gave

'John gave a book to Mary.'

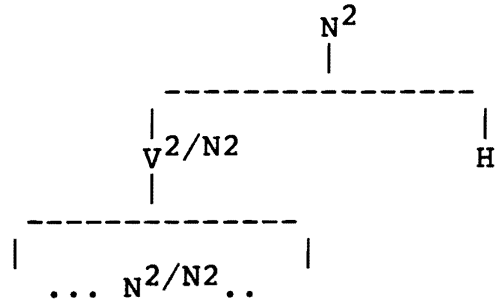
e. John ga Mary o hon o watasita.

f. Mary o [John ga __ hon o watasita].
S

g. Mary o [watasi wa [John ga (kanojo no) kao o butta]
I SHE face hit
to omota.
COMP thought
'It is Mary whose face, I think, John hit.'

These seemingly puzzling data are easily handled by (17), if we merely postulate that 'o' has the function of focusing NPs subcategorized for V. This move seems to be correct, since native speakers recognize the displaced 'NP-o' as emphasized, as reflected in the translation. FCR 10 will block 'subject-dominated' NPs from being emphasized by 'o'.(FCR 10: DM[+focus,+acc] > ¬[nom].)

Now, we turn to the last of the four unbounded dependency constructions in Japanese, i.e., the relative construction. Japanese relative clauses are different from English counterparts in that there are no overt 'relativizers' and that relative clauses precede head NPs. The structure of Japanese relative clauses is shown below.



This structure requires a rule like (19):

(19) N^2 ---> H, $V^{2/N2}$

Are these rules (i.e.,13, 17, and 19) to be stated separately as they are now? The rules (13) and (19) are related to each other since they generate pragmatic constructions, local and long-distance, respectively. On the other hand, the rules (17) and (19) give rise to UDCs which might as well be covered by one rule, if possible. The three rules are repeated:

(20) a. V^2 ---> $N^{2/N2}$, $N^{2[DM]}$, W (= 13)

b. V^2 ---> H/N2, $N^{2[DM]}$ (= 17)

c. N^2 ---> $V^{2/N2}$, H (= 19)

(20a) and (20b) can be reduced to one rule, (21). As we combine the two rules into (21), W is no longer needed since the output of the rules (20a) and (20b) is the subset of the output of (21).[8]

(21) V^2 ---> $X^{2/N2}$, $N^{2[DM]}$

Now, (21) and (20c) can easily be incorporated into one rule:[9]

(22) Y^2 ---> $X^{2/N2}$, $N^{2[P]}$, where P is a variable over DM or NIL.

At this point we should examine whether rule (22) generates unwanted strings which were not sanctioned by the previous two rules. According to the GKPS's formulation of "free instantiation of features" rule (22) is projected on the tree in one of the following ways.[10]

(23) a. N^2 ---> $N^{2/N2}$, $N^{2[P]}$

b. N^2 ---> $V^{2/N2}$, $N^{2[P]}$

c. V^2 ---> $N^{2/N2}$, $N^{2[P]}$

d. V^2 ---> $V^{2/N2}$, $N^{2[P]}$

---

[8] This amalgamation adds a new power to the rule (i.e., the difference of the two output sets is desirably related to grammatical sentences). (20a) cannot generate the sentence (24c), whereas the portion of (21) which corresponds to (20a) can. See the argument involving 'vacuous extraction' in (24).

[9] (22) is more correctly 'Y^2 ---> $X^{2/N2}$, X[+N][P]', because the head of relative constructions is considered N[BAR 1]. I will not, due to limited space, explicate minor details involving this change. Readers will easily find that only correct bar levels are assigned to each case via FCRS 4, 5, and 6.

[10] Only major syntactic features were considered. Recall that Japanese has neither APs nor PPs.

(23c) is not what we want and is correctly ruled out by the HFC. (21a) has the effect of replacing the case markers with DM and extracting NP vacuously, if the head noun is not preceded by any adnominal NP. If a head noun is preceded by any number of adnominal NPs, a few options of extraction are possible. All the adnominal NPs can be cyclically extracted out of the NP into the initial sentence position.[11] Some other options of the rule application may vacuously move NPs into some position within the domain of the highest NP. It would be interesting if this vacuous operation was totally null. It is, in fact, independently needed since we find the following examples:

(24) a. Koko GA Fuji-san GA chojo ga yoku mieru.
here top
'It is here and it is Mt. Fuji that the top (of it) is seen easily.'

b. Bunmeikoku GA dansei GA heikinzyoomyo ga mizikai.

c. Ano toki wa Mary wa (zibun no) otosan ga kita.
that time father came

'At that time (of the event), as for Mary, her father came.'

d. Heikinzyoomyo GA dansei GA bunmeikoku GA mizikai.

If no vacuous extraction were allowed, no two NPs directly attached to any VP could be extracted from their original position in the sentence initial position. (24c) is the case which shows that two NPs immediately dominated by the VP node should be able to move simultaneously somehow. That is, the vacuous extraction is not syntactically null (see 25). (24c) provides further evidence for the extraction analysis since the presence of the resumptive element suggests that 'Mary' should be displaced from situ. Note that the path to the sentence initial position is already 'slash-instantiated' by 'ano toki.' Thus, in (25) the local tree T1 is sanctioned by (23d) and T2 by (23a).

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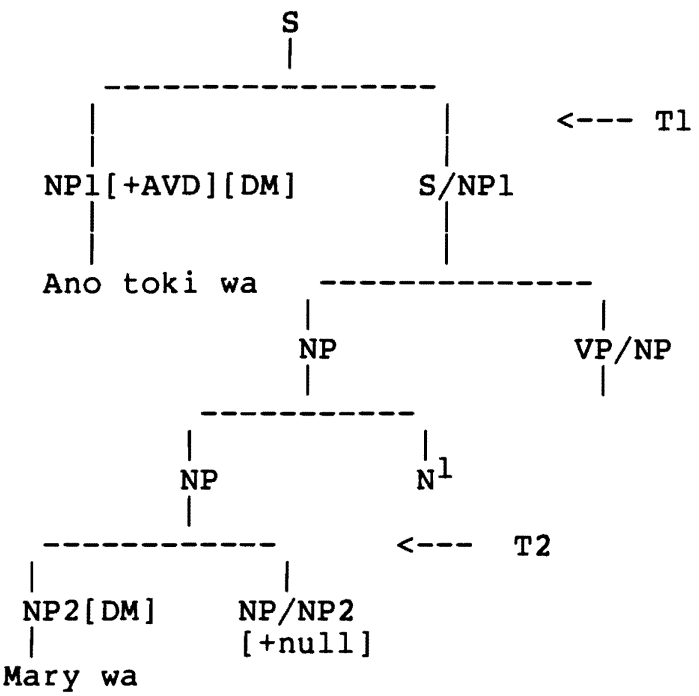
[11] A kind of cyclic extraction is needed if we consider that 'SLASH' only chooses the untrodden path. Only the cyclic option can generate (24d).

(25)



(23b) is responsible for the relative clauses and (23d) for long-distance pragmatic constructions. It should be noted that [P] of (23b) is matched with NIL but not DM, largely due to FCR 5 and FCR 6.

This analysis claims that all the unbounded dependency constructions are generated by a single ID rule ((22)= the second non-lexical ID rule) and LP rule (2). The only difference between TOPC and relative constructions is the constituent order which is handled by one LP statement. It would be interesting to turn to Kuno's statement that Relativization must involve Topicalization for some unknown reason: (Kuno 1973: 254).

> I shall suggest in conclusion that what is relativized in a relative clause is not an ordinary noun phrase but a noun phrase followed by the thematic particle 'wa'.

In this paper, it has been shown that the unknown coincidental phenomenon is plainly predictable and that 'Relativization' is not preceded by 'Topicalization'.

Up to now we have discussed the top part of the extraction rule. The bottom part will be accounted for by (26):

(26) Slash Termination Metarule(STM)

X ---> N^2, P P: particle

X ---> $N^{2[+null]}$

This rule says that N^2 which is sister to P can be extracted. The two effects of this rule are the extraction of N^2 and the deletion of particles. There are three main reasons for not extracting NP[P]. The STM is to operate on the lexical ID rule even in the cases where non-head NP can be missing in the noun phrase.[12] The second reason is involved with relative clauses where the head NP should not bear any particle which it used to bear in the adnominal clause. Otherwise, we need a deletion rule which obligatorily applies to the particles of the relativized NP. The third reason is that we do not find a 'koko-ga-kara' form which would be found if derived the other way, since [P] is simply a feature of NPs which can be freely branched off NPs. Still another reason is that we would need an additional deletion rule which applies to case markers such as 'ga' and 'o', since they do not show alternation. Thus, alternation (e.g. 'koko kara ga' and 'koko ga') becomes a matter of particle retrieval rather than deletion. Thus, the following formulation treats alternation:

(27) Particle Retrieval Metarule

X ----> NP[x], DM

X ----> NP[P[x]], DM where x= value of Pn or [+dat] .

The examples in (28) provide further evidence for the retrieval analysis and are also very clear pieces of evidence for the existence of the "Anti-Foot Feature" which was mentioned earlier.

(28) a. Sono yama no chojo (kara) GA Fujisan ga yoku mieru.
this mountain top from DM MT. Fuji CM well is-seen.

'It is (from) the top of this mountain that Mt. Fuji is easily seen.'

---

[12] This is a little different from its English counterpart since P is not considered the head of NP.

b. Sono yama wa chojo (kara) wa/GA Fujisan ga yoku mieru.

c. Sono yama (kara) wa chojo (kara) GA Fujisan ga yoku mieru.

'As for this mountain, it is from its top that Mt. Fuji is easily seen.' (= 28b)

The alternation between 'sono yama GA' and 'sono yama kara GA' is possible only if we assume that the case feature of the dominating NP is somehow related to (e.g. percolates down to) the non-head daughter NP as well. (Also note that FCR 1 and FCR 10 are filters even of the most deeply embedded adnominal NPs.) Furthermore, these examples almost nullify any kind of deletion analysis since no theory postulates an "underlying 'kara'" between 'yama' and 'chojo'.

2.2.3 Verbal Dependent DNC (V-DNC)

The sentences in (3) and (4) of Section 1 also have a derived structure although the multiple appearance of GA is sanctioned differently from the S-DNC. (The sentences are repeated here.)

(29) a. Boku GA kodomo ga aru.

b. Boku ni kodomo ga aru.

c. Mary GA otoosan ga kowai.

d. Mary ni otoosan ga kowai.

e. John ga sugaku ga suki-da.

f.*John ni sugaku ga suki-da.

I will assume, as previous authors have, that the second NP-ga is the object of the verb whose subcat feature is specified in the fourth lexical ID rule (i.e, VP ---> H[3], NP[ga]). I will also assume that most of the verbs of H[3] have a [+stative] feature.[13] As is suggested in Kim (1985), it will also be assumed that case markers (CM) are subject to a local well-formedness condition which is reflected in FSD 2 and FSD 3. Thus, VP will take NP[CM[ga]] as its argument unless specified otherwise, as V will take NP[CM[o]]. Adverbial NPs are freely introduced into any point of the VP axis as far as the denotation of the new sentence

---

[13] A slight difference can be seen between Kuno's classification and mine, since some verbals such as 'suki', 'hosi', etc. are not considered containing [+stative] in this paper.

is the subset of the semantic denotation of the original sentences.

As is observed by Kageyama(1978:46), 'NP-ni' is considered an unmarked expression of 'NP-GA' in (29). Thus, 'NP-ni' will be regarded as basic and NP-GA as emphatic (i.e., focusing), and they will be generated as such respectively. By postulating the FCR 2, we can easily take care of the 'NP-ni' versions:

(30) FCR 2:[+stative][BAR 2] > [CM AGR[NFORM[CM[+nom, +dat]]]]

FCR 2 is intended to say that if a phrasal category has a [+stative] feature, the category takes 'NP-ni' as its sister. This FCR correctly sanctions all the NP[CM[ni]]'s which are sisters of VP[+stative]. It should also be noted that the "idiosyncratic" sentences, which made Tonoike take the opposite direction of Kuno, are accounted for by simply omitting [+stative] from the related lexical entries (i.e., as for the cases like (29f)). Then FSD 2 will take care of the remaining portion. NP-GA versions will be sanctioned by the extraction rule which is formulated in the preceding sections.

There is still another problem which was rarely touched upon in previous analyses of the DNC, i.e., that is, the alternation between 'ga' and 'o', as illustrated in (31):

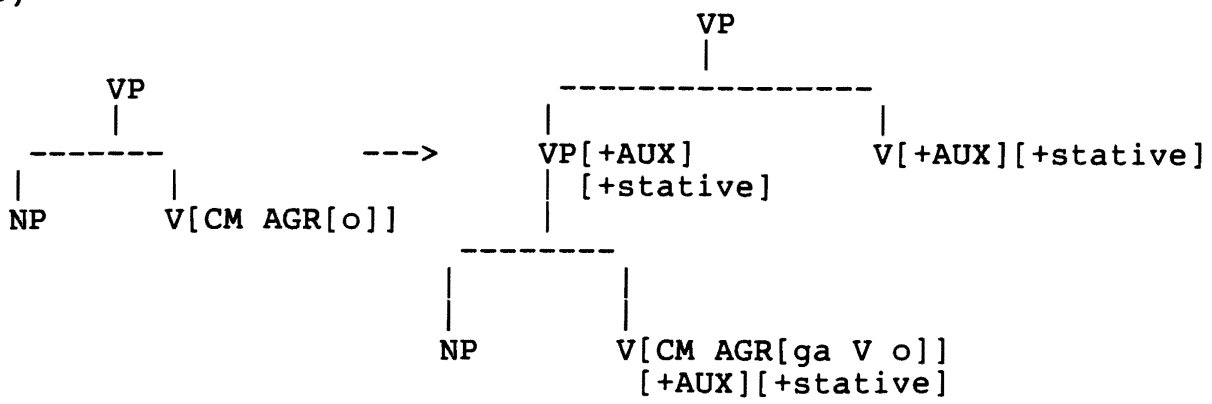
(31) Boku ga osusi o/ga tabe-tai. (=4.a)

The problem is a little complicated because the root verb 'tabe' is a transitive verb and only admits NP[o] in normal instances. In this paper the following FCR is proposed:

(32) FCR 8:[+AUX][+stative][BAR 0] > CM AGR[NFORM[CM[ga V o]]]

FCR 8 says that if a lexical V contains [+AUX] and [+stative] features the verb can take either NP-ga or NP-o as its argument (cf. FSD 5: ¬[+stative]). This solution is possible only if we treat [stative] and [AUX] as an "Anti-foot Feature". Otherwise, a kind of restructuring analysis becomes an alternative which is least preferred for various reasons. The effect of FCR 8 is realized in constructions like (33):

(33)



3. CONCLUSION

One of the most advantageous results of the GPSG approach seems to be that it accounts for the DNCs, the DOC, and topic and relative constructions simultaneously, without appealing to extra rules or *ad hoc* provisions. That is, the isomorphism which exists among those constructions is desirably represented in this analysis. Secondly, the analysis proposed in this paper is compatible with all the DNCs including the ones which used to be considered 'idiosyncratic'. Thirdly, this analysis reflects the general principle that a sister NP of VP is a controller of agreement concerning honorifics and reflexives. Fourthly, it is shown that 'Anti-foot Features' are recognized as syntactic features in Japanese. Fifthly, the treatment proposed in this paper is also in line with the ambiguous use of sentences, i.e., sentences which have basically different structures may take on the same appearance. (34) can be interpreted in three different ways according to context.

(34) Mary ga inu ga kowai.

Sixth, this analysis also recognizes different uses of 'ga' and 'o', i.e, as a focusing device and as an ordinary subject marker. Finally, in this paper I have assumed the existence of VP, which might be controversial. The strongest motivation for the flat analysis seems to be to avoid the problem involved with "scrambling". However, I conjecture, simplifying somewhat, that scrambled word order is formally derivable either by (35a) or by (35b).

(35) a. $V^{2[+SUBJ]}$ ---> $[V^{2/H]*}$, H[BAR 0]

b. VP ---> W

VP ---> N^2, W
[+SUBJ]

(35a) is a more plausible solution than (35b), since information involving VP (or V) and its argument is not lost in (35a) whereas it is in (35b).[14] Another reason is that (35b) should iteratively apply to its own output, which is less preferred, whereas (35a) need not.

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[14] We do not want to lose any information about slash features and AGR. Nor do we want to have those features scrambled as a result of the application of the rule. It should be noted that H is not a variable but an underdefined multiset.

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