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EMPHASIS HARMONY IN A MODERN ARAMAIC DIALECT

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In the modern Aramaic dialect of the Jews of Azerbaijan, emphasis (pharyngealization) behaves much like vowel harmony, though it affects consonants and vowels alike. An autosegmental analysis of its distribution shows that emphatic spans are underlyingly marked as such, whereas plain spans must have no initial specification as to emphasis, and are eventually pronounced as non-emphatic by default. In mixed words, which are part plain and part emphatic, emphasis is underlyingly associated with a particular syllable; but in words which are emphatic throughout, the underlying mark of emphasis is floating—not associated with any particular segmental position.*

INTRODUCTION

1. Modern Aramaic, like Arabic, makes use of the phonological property traditionally known as emphasis, a complex of secondary articulations including velarization and pharyngealization as well as associated phonetic effects. In the various modern Aramaic dialects, emphasis behaves in two different ways. Conservative dialects have preserved a series of emphatic consonants, and in fact added additional members to the old Aramaic pair *T S*;¹ thus the dialect of Amadiya, Iraq, has underlying emphatic *P B M T D S Z Ć L R*.² As in Arabic, these emphatic consonants affect nearby vowels and consonants. No detailed study has been made of the assimilatory spread of emphasis within a word in conservative varieties of modern Aramaic, but the behavior of emphasis in such dialects resembles that in colloquial Arabic.³ In Aramaic dialects of Iran, the domain of emphasis is larger: with limited exceptions, a whole word is either emphatic or plain. Descriptions of this 'emphasis harmony' exist for two dialects of Aramaic in Iran: that of the Christians of the city of Urmi, and

* I am grateful to Mark Aronoff, Ellen Broselow, and Robert Vago for extensive and very helpful discussions of this material. A briefer version of this paper was presented at the Parasession on Autosegmental and Metrical Phonology of the Chicago Linguistic Society in April 1987; it is to appear in the volume of papers from that session, edited by Anna Bosch et al.

¹ Throughout this paper, emphatic segments are indicated with capitals, rather than with the traditional dot underneath.

² The phonology of the Amadiya dialect is discussed in Hoberman 1987, §3.5 and Appendix A. The relationship between pharyngealization and the true pharyngeals *ħ* and *ʕ* is treated in Hoberman 1985.

³ Emphasis in Palestinian Arabic has been studied in detail by Card 1983. There emphasis is conditioned by the presence of an underlying emphatic consonant; according to Card, it spreads both rightward and leftward throughout a word—unless blocked by one of the segments *ii*, *y*, and *š*, all of which are high and non-back. Thus a word may be emphatic throughout, such as *BXAA-TRAK* 'with your permission, goodbye', *BATTAK* 'your ducks', *SOODA* 'baking soda'. At the other extreme, a word may have as few as one emphatic segment, such as *Tiin* 'mud' or *biiD* 'white (plural)'. For another analysis of Palestinian Arabic (a slightly different dialect) see Ghazeli 1977. In the Arabic of Cairo, emphasis affects at least an entire syllable; its spreading is conditioned by both syllable structure and vowel quality (Lehn 1963, Broselow 1976:41–6). The facts in conservative dialects of modern Aramaic, as well as in other varieties of Arabic, are similar but probably not identical.

that of the Jews of Iranian Azerbaijan.⁴ The subject of this paper is emphasis harmony in the latter (abbreviated AzJA, for 'Azerbaijani Jewish Aramaic').⁵

The innovation in the late 1970's of phonological frameworks with non-linear representation—metrical and autosegmental phonology—has inspired much penetrating work on vowel harmony systems of diverse character.⁶ The fact that emphasis harmony in AzJA behaves in most respects like vowel harmony, as will be demonstrated in this paper, makes it clear that true vowel harmony is but a special case of a larger class of harmony systems. Such systems are themselves among the diverse phonological phenomena that are essentially prosodic, including quantity, tone, and accent systems of all kinds. The purpose of the present paper, then, is to give an account of one Aramaic dialect (AzJA) with a well-developed system of emphasis harmony, much like vowel harmony. This system will be explicated within the framework of autosegmental phonology, in particular that of Kiparsky 1985.⁷

Four Aramaic languages have survived to this century. Three have relatively few speakers and little dialectal variation: the Ma'lula group near Damascus, Turoyo in southeastern Turkey, and Mandaic in Khuzistan (Iran). The largest Aramaic language in terms of numbers of speakers and dialectal diversity is the fourth, Northeastern Neo-Aramaic, spoken by Christian and Jewish minorities in northern Iraq and in adjacent parts of Iran and Turkey.⁸

Azerbaijani Jewish Aramaic (AzJA) is a Northeastern dialect, though in many

⁴ On the Christian dialect, see Hetzron (1969:113–14), Jušmanov (1938), Marogulov (1976:8–9), and Polotsky (1961:7–10); on the Jewish dialect, Garbell (1964, 1965b:33–4). These two dialects are separated not geographically—the city of Urmi is in the Iranian province of Azerbaijan—but socially, according to membership in the two religious communities.

⁵ Beside the authors mentioned in this section, emphasis has been treated as a prosodic phenomenon or long component by Harrell 1957 and Sasse 1971 for Arabic dialects, and by Jacobi 1973 for Aramaic. Another Semitic language, Maltese, has extensive vowel-to-vowel assimilation, bordering on true vowel harmony (Puech 1978); but this has nothing to do with emphasis. Further discussion of emphasis in Arabic and Aramaic as a prosodic phenomenon, with additional references, appears in Tsereteli 1982.

⁶ Several of the papers in Van der Hulst & Smith 1982b are good examples. The typologies of formal systems for vowel harmony set up by Halle & Vergnaud 1981 and by Kaye 1982 have been reanalysed in a uniform framework by Kiparsky 1985.

⁷ The diachronic issue of how the distribution of emphasis in AzJA came to be as it is constitutes a separate and complex problem, not discussed here. The chief facts are described in Garbell 1964; see also Hoberman 1985.

⁸ Although the number of Aramaic speakers in the world at the beginning of the 20th century was at least two or three hundred thousand, we can be sure that, within the next generation or two, the number of fluent speakers will have shrunk to a small fraction of that. In part this has resulted from the disruptions of war and the assimilatory pressures of modern state cultures using Arabic, Turkish, and Persian. Many Aramaic speakers have emigrated from their native region during the 20th century—a large proportion of the Christians to cities in the Middle East, the Soviet Union, western Europe, and America, and essentially all the Jews to Israel. The Jewish and Christian communities are Aramaic-speaking minorities in a region where the Muslim majority speaks Kurdish and Azeri Turkish.

respects the least typical.⁹ AzJA has numerous loan words, mainly from Kurdish and Turkish, but also from Arabic, Persian, Hebrew, Armenian, and several European languages. The Kurdish and Turkish contact has deeply affected the dialect at all levels of structure, from phonetics to word order (Garbell 1965a). The verb system is still thoroughly Semitic in character, as ‘non-concatenative’ in structure as any classical Semitic language (even for borrowed verbs); but most nouns and adjectives do not contain recurring discontinuous roots and vowel patterns, and there are many derivational and inflectional processes that are exclusively suffixing. (In this, AzJA is like other modern Semitic languages, including Arabic and Hebrew.) The distinction between concatenative and non-concatenative morphology, it turns out, has important consequences for the phonology of emphasis.

A SKETCH OF THE ANALYSIS

2. Clements & Sezer (1982:217) suggest that a vowel-harmony system can be described in part by specifying the settings of five parameters. Although emphasis harmony is not vowel harmony, the same parameters are relevant; and I will begin the description of the phonology of emphasis in Azerbaijan by stating the settings.

(a) The class of prosodic melody units or ‘autosegmentally-represented harmony features’: the feature [Constricted Pharynx], abbreviated [CP], together with some other features.¹⁰

(b) The class of prosody-bearing units to which the harmony features are associated: the syllable.

(c) ‘The (possibly null) class of OPAQUE SEGMENTS, defined as those which are underlyingly associated’ with an autosegmental harmony feature, and which therefore may block the autosegmental spreading of harmony: empty.¹¹

⁹ My information on AzJA is entirely from the works of Garbell, mainly her book *The Jewish Neo-Aramaic dialect of Persian Azerbaijan* (JNADPA, 1965b). All the examples are taken from the Glossary in JNADPA, unless another location is mentioned. I have generally cited verbs by their gerunds, rather than by their abstract roots, as G does; when the gerunds are not given explicitly by G, I have constructed them on the basis of her very precise and detailed grammar. No analytical point depends on these constructed forms; and while I believe they are almost surely correct, I make this caveat so that other explorers of the territory will not rely on my gerunds, but will go to G’s works directly.

The segmental inventory of AzJA includes the consonants *p b t d č ĵ k g q f w s z š ž x γ m n l r y h ʔ* and the vowels *i e a o u*. Vowel and consonant quantity is phonemic, both underlyingly and at the surface; but its functional load is small. Word stress is most often on the final syllable, and only non-final stress is indicated in the transcription. The transcription system of JNADPA is retained here with two minor differences: emphatic segments are indicated with capital letters rather than italics, and *y* is used in place of G’s *j*.

¹⁰ Although the purpose of this paper is not to investigate the phonetic implementation of emphasis, or to propose any innovations required to represent it appropriately in a feature system, it is worth pointing out that these are complex and problematic issues. For details, see the Appendix, below.

¹¹ This means that no consonants are inherently emphatic or plain. The uvular *q*, for instance, occurs in both emphatic and plain environments.

(d) 'The (possibly null) class of TRANSPARENT SEGMENTS which must be formally excluded from the class' of prosody-bearing units: empty.

(e) 'The DOMAIN [of autosegmental association] within which the Well-formedness Conditions initially apply': the word.¹²

In the great majority of cases, a whole word—including the stem, prefixes, and suffixes—is either emphatic or plain. Emphatic words are only about half as numerous as plain words in the lexicon (and make up an even smaller portion of the word tokens in a text). In general, emphasis or its lack does not spread between words. Word stems are lexically specified as emphatic or plain, and do not generally change in derivation or inflection. While most stems are either emphatic or plain throughout, a small minority (about 2%) are mixed, having a plain part followed by an emphatic part.¹³ Inflectional affixes are always neutral, and become emphatic or plain depending on the stem to which they are attached. Derivational suffixes are of two kinds: those which are neutral, and those which are emphatic regardless of the nature of the stem to which they are affixed. Compound words made up of two stems of which one is emphatic, the other plain, sometimes keep their separate character and sometimes assimilate, becoming emphatic throughout. Each of these topics will be discussed in the following sections.

As in Arabic (Van der Hulst & Smith 1982a, Card 1983), the emphasis feature [+CP] of AzJA lies on its own separate autosegmental tier. Its status in underlying forms and its manner of autosegmental association are described by the following principles:

- (i) Emphasis in AzJA associates with syllables rather than with segments.
- (ii) While an emphatic span has an underlying autosegment [+CP], a plain span has no specification for the feature [CP]; [−CP] does not appear in the underlying form, but all syllables not associated with [+CP] are eventually pronounced as [−CP] by default.¹⁴
- (iii) Emphasis in a mixed word is associated in the underlying structure with a particular syllable. Linkage with an underlyingly associated autosegment spreads unidirectionally rightward to the end of the word.¹⁵
- (iv) In a wholly emphatic word, the feature [+CP] is initially floating, i.e.

¹² Very likely, these parameters are not all mutually independent. Thus it seems reasonable that, if the prosody-bearing unit is the syllable, then the domain of association will be the word (or perhaps the foot), and the character of individual segments will be irrelevant. Such correlations would be worth investigating in a variety of languages.

¹³ The question of the root, in the Semitic sense of a discontinuous sequence of non-syllabics, will be taken up in §4.2.

¹⁴ Kiparsky (1985:115–22) and Pulleyblank (1986) argue for the use of such default rules in harmony systems. An alternative approach, following Halle & Vergnaud or Kaye, would likewise have [+CP] as a prosodic unit on a separate autosegmental tier, but all core segments would be inherently [−CP]; then 'Autosegmental features take precedence over segmental features' (Kaye, 387). There seems to be no advantage to the latter approach, at least for emphasis in AzJA.

¹⁵ The spreading of [+CP] would be blocked if a syllable later in the word were associated with the feature [−CP]. Such a structure occurs in only one or two attested AzJA words: *YASmin* 'jasmine' and perhaps *HALQAband* 'bound with loops', which are discussed below.

not associated with any particular syllable. A floating autosegment associates with all syllables in the word.

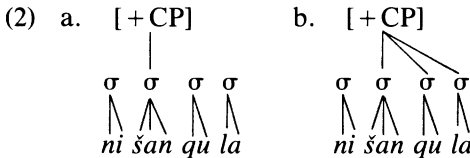
The evidence for these hypotheses is presented below in two parts. In §3, I present the analysis of mixed words, and demonstrate propositions (i–iii). In §4, I treat words which are wholly emphatic or wholly plain, and demonstrate proposition (iv).

ASSOCIATED [+CP] AND RIGHTWARD SPREADING

3.1. THE SYLLABLE AS THE PROSODY-BEARING UNIT. The structure of syllables in AzJA has been described by Garbell (JNADPA 27–33): minimally, a single vowel, or as complex as CCVCC. A syllable must be emphatic or plain as a whole—never part emphatic, part plain—as the following words illustrate:¹⁶

- (1) *šaRAW* ‘corn growing of its own accord’
risWAY ‘unmannerly speech’
sawSAR ‘mole’
seyfulLAH ‘a great deal’
fandBAZ ‘trickster’

The analysis sketched above expresses this generalization in the most direct way, by saying that the unit with which [CP] autosegmentally associates is the syllable, rather than the segment. (Another argument for the syllable as the melody-bearing unit is given in §4.2 below.) The representation of a mixed word like *niŠANQULA* ‘betrothal’ is initially 2a; after the rightward spreading of autosegmental association, it becomes 2b:¹⁷



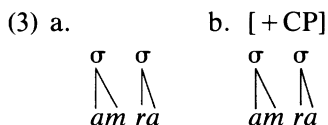
When it comes to phonetic interpretation, all parts of the final phonological

¹⁶ A few words appear to violate the generalization that the boundaries of the emphatic span coincide with syllable boundaries. Assuming the rules for syllabification given in JNADPA 32–3, and marking the relevant syllable boundaries with a dot, the apparent exceptions are *pari.šAN* ‘miserable’, *pari.šANULA* ‘misery’, *mi.yANA* ‘middle’, *eli.yAHU* a personal name, *hilla.bAZ* ‘deceiver’, *hilla.bAZULA* ‘deceitfulness’. It is conceivable that the high front character of the *š* in *pari.šAN(ULA)*, and of the *y* in *mi.yANA* and *eli.yAHU*, might cause them to remain unemphatic together with the preceding syllable (as in Palestinian Arabic, where *ii*, *y*, and *š* block the spread of emphasis, according to Card). But this explanation is unlikely, in view of the emphatic *š* in *ni.šAN*; moreover, *hillabAZ(ULA)* admits no such explanation. More likely, all these apparent exceptions result from typographical errors. This is certainly true in the case of *eli.yAHU*: Although the glossary of JNADPA lists it in that anomalous form, it appears repeatedly in texts as *eliYAHU*, just as my hypothesis would predict (pp. 137, 157, 261).

¹⁷ In some versions of autosegmental theory, this spreading would take place by the universal conventions of association, plus the well-formedness conditions on autosegmental representations. One application of this convention in a harmony system is given by Clements & Sezer (218–19). Pulleyblank (80–96) argues that the universal conventions create only one-to-one association, and that all spreading is by language-particular rule. There is no empirical difference for AzJA between these two approaches.

representation must be accessible to the rules that specify the fine phonetic details. For a feature like [CP] to be the property of a syllable, as claimed here, probably means no more or less than to be a property of all the segments which are part of that syllable; and [+CP] does not spread autosegmentally to the individual segments within a syllable. Moreover, according to a proposal by Younes 1983 (taken up by McCarthy 1986:227), elements are on separate autosegmental tiers only in the earlier stages of a derivation. At some point in the derivation, all the tiers are folded together in a process called Tier Conflation; from that point, harmony systems and other autosegmental systems behave phonologically according to classical segmental principles. In Tier Conflation, the CV tier provides the pivot which allows all other autosegmental tiers to be synchronized correctly. At this point a prosodic unit like [CP] in AzJA which is linked to a syllable as a whole (i.e. to the σ node), like all other units on separate tiers, will be conflated with the feature bundles corresponding to the proper segmental slots on the CV tier. The metrical level of syllables simply specifies the C and V slots with which the feature [CP] is phonetically associated.¹⁸

3.2. STEMS. Typically, a word is either entirely emphatic or entirely plain. Approximately 4,100 lexical items are listed in the glossary of JNADPA; of these, about 36% are emphatic, the rest plain.¹⁹ Emphatic words have (un-associated or 'floating') [+CP] in their lexical representations; but the majority of words, I suggest, have no lexical marking for [CP], and end up non-emphatic by default. Thus the lexical representation for *amra* 'she may say' (JNADPA 66) is 3a, and for *AMRA* 'wool' is 3b:



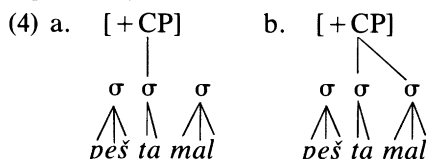
Both syllables of *AMRA* 'wool' will automatically be linked to the autosegment [+CP], and the entire word emerges as emphatic. The word *amra* 'she may say' is later marked [-CP] by a redundancy rule.

¹⁸ Since the autosegmental association of melody features to the syllable node may be controversial (although the possibility is mentioned by Van der Hulst & Smith 1982a:313–14), it is important to examine the consequences for the analysis of AzJA if the syllable as melody-bearing unit were rejected, and if association were with segmental positions. I will point out the alternatives to syllable association at each of the places in this paper at which the notion figures in the analysis. Here I merely note that such reanalyses are quite simple, and interfere in no crucial way with the major points of this paper. For example, in order to account for the fact that the cut between the plain and the emphatic parts of a mixed word always coincides with the syllable boundary, a rule will be needed which spreads emphasis from any emphatic segment to its entire syllable. This rule is stated below in fn. 26.

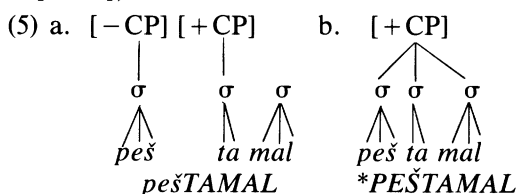
¹⁹ This calculation was made easy by the arrangement of the glossary, which alphabetizes emphatic and plain words separately; thus an approximation could be made simply by measuring column-inches. The non-emphatic measure was reduced by 2% to take into account mixed stems, virtually all of which begin with a plain syllable (as will be described presently), and so are alphabetized among the plain words.

There are 72 stems like *nišAN* ‘sign, mark’ which are MIXED—i.e. part plain, part emphatic. (This excludes compounds and multiple derivatives from the same stem, like *nišANQA* ‘sign, mark, betrothal’, *nišANQULA* ‘betrothal’.) Mixed stems thus amount to only about 2% of the total number of stems. In these stems, a striking fact appears: only one of them, *YASmin* ‘jasmine’, has the sequence emphatic–plain; in the other 71, the sequence is plain–emphatic.²⁰ Furthermore, mixed stems always consist of only two parts: an emphatic span and a plain span. None have three parts, whether emphatic–plain–emphatic or plain–emphatic–plain.

The predominance of plain words over emphatic, the nearly absolute restriction against the sequence emphatic–plain within a word, and the absolute exclusion of three-part words are expressed in the formal analysis as follows. A mixed word like *pešTAMAL* ‘towel’ will have [+CP] linked lexically to a single syllable, the leftmost in the emphatic span 4a. After autosegmental spreading, the representation will be 4b, and the unlinked syllable will become non-emphatic by default.²¹



If spreading from an initially associated autosegment were bidirectional, then the underlying representation of a mixed word like *pešTAMAL* would have to include [–CP], as in 5a:



If spreading were bidirectional but [–CP] were not specified, then emphasis would spread in both directions throughout the word, as in 5b; then no words could be part plain and part emphatic. Therefore we must say that spreading is left-to-right only, if we want to keep the notion that [–CP] does not appear in underlying forms. There are strong reasons for holding that notion, as will be shown below.

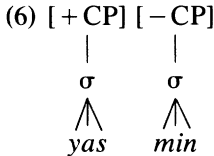
Readers familiar with the notion of extraprosodicity as it is used to handle exceptions to harmony (Kiparsky, 117–22) will note at this point that the same approach appears applicable to mixed words in AzJA. The first syllable of *pešTAMAL* would be marked as extraprosodic in underlying form, (*peš*)*tamal*,

²⁰ Another apparent mixed stem of this type is *HALQAband* ‘loop-bound, bound with loops’. This is actually a compound, since both its parts exist as separate words: *HALQA* ‘ring, link’ and *band* ‘bound’. Compound words are discussed below in §3.5 and §4.3.

²¹ Mixed words are not, in general, morphologically complex. Thus *pešTAMAL* is not morphologically analysable as *peš* + *TAMAL*.

and the emphasis feature would be floating. The extraprosodicity of *peš* would prevent [+CP] from associating with that syllable. However, I will show in the concluding section of the paper that this approach cannot account for the full range of data in AzJA.

The word *YASmin* 'jasmine', which has the sequence emphatic–plain, is the only one in the language where [–CP] appears in a lexical representation:²²



Thus the extremely rare sequence emphatic–plain corresponds to the anomalous appearance of [–CP] in an underlying representation. The word *YASmin* shows that this kind of structure is possible, although in fact it does not generally exist. An underlying specification of [–CP] would also be required in another situation, which is conceivable but completely non-existent: three-part mixed words, emphatic–plain–emphatic or plain–emphatic–plain. Either sequence would require a marking of [–CP].²³

To say that a mixed word is characterized by an underlying specification of [+CP] on the first emphatic syllable is to say that such a syllable has a special phonological status. This is supported by a notable constraint on the segmental make-up of such syllables. Garbell (JNADPA 34) states the distribution of emphatic ('flat') syllables in mixed words as follows: 'FLAT SYLLABLES of the type *CaC* occur only when base final.' If we examine the attested mixed words, we can make this constraint more precise.²⁴

First, as we have seen, in *YASmin* the emphatic syllable is not final. Second,

²² An anonymous reader of an earlier version of this paper pointed out that this is not the only conceivable formal treatment of the exceptional nature of *YASmin*. One might say that, in this one word, autosegmental spreading of [+CP] is leftward or is blocked entirely; or that one or the other syllable is extraprosodic. With only one such word known—and no attested alternations, derivations, or inflections—there is no way to investigate this question empirically. However, any of these alternative proposals calls for an abstract diacritic feature or exception indicator of some kind. By contrast, the proposal to include a specification of [–CP] in the underlying form expresses the exceptionality of this word by means of a quite concrete phonetic feature, with the correct phonology then following by the general principles of autosegmental association. The latter approach, which uses the pre-linking of [–CP] with a particular syllable, is therefore to be preferred. Pulleyblank has argued for pre-linking as the appropriate means to handle exceptions in an autosegmental analysis, showing (157) that '... diacritics constitute an inherently more powerful device than prelinking. Consequently, the more restrictive theory will choose prelinking over diacritics unless it is not possible to do so.'

²³ I thank Ellen Broselow for calling my attention to the significance of the lack of three-part mixed words.

²⁴ Elsewhere, Garbell states that emphatic syllables in mixed words 'are preceded by a syllable centering in /i/, /e/ or /u/' (1964:90). In fact, however, the last plain syllable preceding the first emphatic one may have not only *i*, *e*, or *u*, but also *a* or *o*—i.e. any vowel: *darMANA* 'drug', *koRAMAR* 'asp', *šalFAYA* 'razor blade'.

there are many stems which have not one emphatic syllable, but a sequence of them:

- (7) *peMARA* 'spade'
pešTAMAL 'towel'
giLANAR 'species of small cherry'
siLAHLAMIŠ 'supplied with weapons'

Third, the emphatic part of a mixed word is not limited to syllables of the type *CaC*; both open and closed syllables occur with other vowels (though infrequently):

- (8) *siLAHLAMIŠ* 'supplied with weapons'
galimBAJĪ 'brother's wife'
miLAQE 'hung grapes'
miXAEL personal name
eliYAHU personal name

One significant generalization about the distribution of emphatic syllables in mixed words remains: in the emphatic span of a mixed word, the first syllable nearly always has the vowel *a*.²⁵ In formal terms, this means that the syllable linked to [+CP] in the underlying representation must have the vowel *a*.²⁶ This generalization can be expressed by the following Morpheme Structure Constraint:

- (9) A syllable associated with [+CP] in an underlying representation must have the vowel *a*.

To recapitulate, only [+CP], not [−CP], appears in underlying representations (the only exception being *YASmin*); in mixed words, it is underlyingly linked to the first emphatic syllable, then spreads rightward. This proposal is

²⁵ There are three exceptions, all with *o* in the relevant syllable: *faeTON* 'light carriage' (from French *phaéton* via Russian, Turkish, and Kurdish, according to Garbell); *etROΓ* 'citron', a Hebrew word used in ritual contexts; and *šemTO*, a personal name (from Hebrew *šem* 'name' + *Tov* 'good'—and so perhaps a compound even in AzJA, not a single word). In view of the multilingualism of Neo-Aramaic speakers, it is not clear whether the phonological analysis of AzJA should take these few words into account.

²⁶ If one wishes to reanalyse this material in such a way that the feature [CP] associates directly with segmental positions, rather than with the syllable node, then the vowel *a* of the first emphatic syllable in mixed words would be opaque, and underlyingly associated with the feature [+CP]. Instead of the structure in 4a, the underlying representation of *pešTAMAL* would be:



The association would spread rightward in the manner suggested above. The following rule of leftward spreading would be needed to make the syllable onset (in this case *t*) emphatic (the broken line indicates the new association created in applying the rule):



I would like to thank Robert Vago for suggesting this approach.

supported by three facts, discussed above: there are two-part, but not three-part mixed words; mixed words have the order plain–emphatic, not emphatic–plain (again, the exception is *YASmin*); and a Morpheme Structure Constraint (9) applies to the first emphatic syllable in a mixed word. Furthermore, the special character of the underlying representation of mixed words—the presence of an associated autosegment—is demonstrated by the relative paucity of mixed words in the lexicon. The following sections will show how these observations and conclusions are supported by the behavior of emphasis in suffixes.

3.3. INFLECTIONAL SUFFIXES. All inflectional affixes are neutral with respect to emphasis, and they become emphatic or plain in harmony with the stem to which they are affixed. Besides prefixes and suffixes, AzJA also has the Semitic kind of discontinuous or non-concatenative morphology. Prefixes are treated in §4.1, and non-concatenative morphology in §4.2. Here are examples (from JNADPA 52, 55, 69–72) illustrating the harmonizing of inflectional suffixes:

- | | | |
|------|-----------------------------------|-------------------------------------|
| (10) | | -e plural |
| | <i>lixm-a</i> 'bread' | <i>lixm-e</i> |
| | <i>pirčaxwar-a</i> 'old woman' | <i>pirčaxwar-e</i> |
| | <i>NOHR-A</i> 'mirror' | <i>NOHR-E</i> |
| | <i>DIQNAXWAR-A</i> 'old man' | <i>DIQNAXWAR-E</i> |
| (11) | | -ox 2sg. masc. possessor |
| | <i>id-a</i> 'hand' | <i>id-ox</i> 'your hand' |
| | <i>DOYI</i> 'maternal uncle' | <i>DOY-OX</i> 'your maternal uncle' |
| (12) | | -(m)un plural subject of Imperative |
| | <i>klu</i> 'write (imp.sg.)' | <i>klú-mun</i> (pl.) |
| | <i>bilbul</i> 'seek (imp.sg.)' | <i>bilbúl-un</i> (pl.) |
| | <i>QU</i> 'rise (imp.sg.)' | <i>QÚ-MUN</i> (pl.) |
| | <i>MIŠLTUN</i> 'make (s.o.) king' | <i>MIŠLTÚN-UN</i> (pl.) |

Emphasis or its absence carries through a whole sequence of such suffixes (examples from JNADPA 76):

- | | |
|------|---|
| (13) | <i>míra</i> /mir-la/ 'she said' |
| | <i>mír-wa-la</i> 'she had said' |
| | <i>mír-wa-la-la</i> 'she had said it' |
| | <i>mir-á-wa-la</i> 'she had said it' |
| (14) | <i>XÍT-LAX</i> 'you (f.sg.) sewed' |
| | <i>XÍT-WA-LAX</i> 'you had sewn' |
| | <i>XÍT-WA-LAX-U</i> 'you had sewn them' |
| | <i>XIT-Í-WA-LAX</i> 'you had sewn them' |

If the stem is part plain, part emphatic, then the inflectional suffixes are emphatic, agreeing with the last syllable of the stem: *pešWAZ* 'the act of going out to meet a guest and bringing him to one's home' plus 2sg. masc. -ox gives *pešWAZOX* 'the act of going out to meet you ...' (JNADPA 273).

A number of enclitics, hyphenated by Garbell, regularly assimilate in em-

phasis in the same way as suffixes; however, they differ from suffixes in that they do not attract word stress—e.g. *HATÁN-IŠ* ‘bridegroom-too’ (JNADPA 197). These include forms of the verb ‘to be’: *PASUXTÉ-LAN* ‘I am glad’ (glad-am.FEM) (118), *RAZÍ-LEN* ‘I am grateful’ (grateful-am.MASC) (197), *brat ŠULTANÉ-LA* ‘She is the daughter of a king’ (daughter.of king-is.FEM) (197).

Thus we can say that no inflectional affix has its own inherent marking for the feature [CP]. If the word stem contains a specification of [+CP], it spreads autosegmentally through the suffixes. If the word is unmarked, then all unspecified syllables, including suffixes, are [–CP] by default.

3.4. DERIVATIONAL SUFFIXES. Some derivational suffixes, to judge by the examples presented in JNADPA 47–49, behave in the same manner as inflectional suffixes. They are inherently neutral with respect to emphasis, and are emphatic or plain in harmony with the word to which they are affixed (or the end of the word, as in the last two examples):²⁷

- | | | |
|------|---|--|
| (15) | <i>dilxoš</i> ‘glad’
<i>QAZZAB</i> ‘unhappy’ | -i abstract noun
<i>dilxoši</i> ‘gladness’
<i>QAZZABI</i> ‘unhappiness’ |
| (16) | <i>kwaša</i> ‘descend’
<i>YAROME</i> ‘rise, lift’ | -an- attributive noun/adjective
<i>kušana</i> ‘low, deep’
<i>RUMMANA</i> ‘high, tall’ |
| (17) | a. <i>ḵwanqa</i> ‘young man’
<i>xarupa</i> ‘sharp’
b. <i>ḶAHĪL</i> ‘young’
<i>XAMUSA</i> ‘sour’
c. <i>dušMAN</i> ‘enemy’
<i>niŠANQA</i> ‘sign, mark’ | -ul- abstract noun
<i>ḵwanqula</i> ‘youth’
<i>xaripula</i> ‘sharpness’
<i>ḶAHĪLULA</i> ‘youth’
<i>XAMISULA</i> ‘sourness’
<i>dušMANULA</i> ‘enmity’
<i>niŠANQULA</i> ‘betrothal’ |

Other suffixes do not alternate in emphasis. Some examples of inherently emphatic suffixes (from JNADPA 47–8 and glossary) are:²⁸

- | | | |
|------|--|--|
| (18) | <i>qalāma</i> ‘pen’
<i>qand</i> ‘sugar’
<i>šakār</i> ‘sugar’ | -DAN implement noun
<i>qalamDAN</i> ‘case for scribe’s utensils’
<i>qandDAN</i> ‘sugarbowl’
<i>šakarDAN</i> ‘sugarbowl’ |
| (19) | <i>dukana</i> ‘store’
<i>mewana</i> ‘guest’ | -DAR attributive noun/adjective
<i>dukanDAR</i> ‘shopkeeper’
<i>mewanDAR</i> ‘hospitable’ |

²⁷ The final *a* or *A* in many of these words is a nominal singular suffix.

²⁸ The glossary of JNADPA contains instances in which two of these suffixes are listed as plain after some plain stems: *fahmdar* ‘reasonable’, *kredar* ‘hired laborer’, *qalandār* ‘unfortunate’, *sardar* ‘high official’, *taazyadar* ‘mourner’, *škurdar* ‘grateful’, *mewandari* ‘hospitality’, *jutkar*, *naqškar*, *nuḵumkar* ‘sorcerer’. In some cases, the same form is given as mixed in Garbell’s discussion of derivational suffixation (pp. 47–8), but as plain in the glossary. I assume that the former is more reliable, that the infrequency of mixed forms led to typographical errors in the glossary, and consequently that these two suffixes are in fact emphatic after all stems.

(20)		-KAR agent noun
	<i>jut</i> 'plough'	<i>jutKAR</i> 'plougher'
	<i>nūjum</i> 'sorcery'	<i>nūjumKAR</i> 'sorcerer'
	<i>naqš</i> 'engraving'	<i>naqšKAR</i> 'engraver'

The striking fact is that, although inherently emphatic suffixes exist—which are emphatic regardless of the stem to which they are affixed—no suffix is inherently plain. The existence of alternating suffixes and of inherently emphatic suffixes, and the complete lack of inherently plain suffixes, are predicted by the analysis. Suffixes, like stems, can be marked [+CP], or be unmarked for emphasis. Unmarked suffixes take on emphasis if the stem is emphatic, by rightward autosegmental spreading; or, if the stem is plain, they are unemphatic by default. There are no suffixes, just as there are (almost) no stems, that are marked [–CP]. I will show below that, just as wholly emphatic words have a floating [+CP] in underlying form, suffixes also exist with a floating autosegment.

3.5. BEYOND THE WORD: COMPOUNDS, CLITIC GROUPS, AND PHRASAL IDIOMS. The spreading of emphasis is generally limited to the confines of a word. In compounds and closely-knit phrasal idioms, however, it sometimes spreads beyond the limits of a word. These include items which Garbell writes as single words or with hyphens, and those written as two separate words but listed as single lexical items in the glossary:²⁹

- (21) *TMANISSAR* 'eighteen' (*TMAN*-, bound allomorph of *tmanyā* 'eight' + *-issar* '-teen', bound allomorph of *isra* 'ten')
TAHÁMME 'three hundred' (*TAHA* 'three' + *imme* 'hundreds')
XWARDIQNA 'old man' (*xwara* 'white' + *DIQNA* 'beard')
DIQNAXWARA 'old man' (*DIQNA* 'beard' + *xwara* 'white')
BE-HĀD 'exceedingly' (*be* 'without' + *HĀD* 'limit, boundary')
BEL ŠULTANA 'royal palace' (Garbell 1964:90; *bela* 'house' + *ŠULTANA* 'king'; cf. *bélit ŠULTANA* 'king's house')
DAE QARI '(good) old woman' (Garbell 1964:90; cf. *daa QARÍ-LA* 'the mother is old')
QAHWAXANA 'coffee-room' (*qahwa* 'coffee' + *XANA* 'shelter')
HABSXANA 'prison' (JNADPA 48; *habs* 'imprisonment' + *XANA* 'shelter')

²⁹ In many compounds, emphasis does not spread; e.g., *qaraXARMAN* 'corn eaten raw', *HALQAband* 'bound with loops'. In others, there is variation. Thus the preposition *be* 'without', with following nouns, forms numerous compound adjectives and adverbs. Some are listed as assimilating and others not: *be-QALAI* 'unfortified', but *BE-BAFA* 'faithless' (both from JNADPA 51); note especially *me-HAD* and *BE-HĀD*, both meaning 'exceedingly'. (I have no explanation for the *m* in *me-HAD*.) Similarly, for 'brother-in-law' and 'sister-in-law', Garbell gives respectively *bar JANAT*, *bar JANATTA* in the glossary, but *BARJANAT*, *BARJANATTA* on p. 50. The word *XANA* 'shelter' forms a part of numerous compounds; two assimilating compounds are listed on p. 14, but there are others which do not assimilate: *bastaXANA* 'place of refuge', *kuraXANA* 'kiln', *diWANXANA* 'audience-hall'. (The listing of *habs* + *XANA* 'prison' in the glossary of JNADPA as unassimilated *habsXANA* is apparently erroneous: in her discussion of noun derivation (48), Garbell explicitly states that the stem *habs* becomes emphatic, forming *HABSXANA*.) Mark Aronoff (p.c.) has pointed out to me that such idiosyncratic behavior is typical of compounds: they frequently exhibit all degrees of word-like or phrase-like behavior, in an unpredictable fashion.

Similar spreading across a boundary occurs in some prepositions which are variably clitics or independent words. Thus we find both *GA-AŠQALON* and *gáat AŠQALON* ‘in Ashkelon’ (JNADPA 118), and both *GĀL DIFDE* and *gāl DIFDE* ‘with each other’ (118, 119, 197).

In each of these assimilating compounds and clitic groups, the whole compound is emphatic, rather than plain. This is predicted by our analysis, since only the positive value of the feature [CP] appears in lexical representations. If both [+CP] and [–CP] appeared in underlying forms, then a compound could just as easily assimilate to the plain member as to the emphatic one.

The spreading of emphasis in compounds bears also on the question of when, in plain spans, the default value [–CP] is filled. One might think that the default [–CP] would be filled-in on stems or words before the formation of compounds, as in 22; but this would prevent the spreading of emphasis from one element of the compound to another (in either direction):

$$(22) \begin{array}{cc} [+CP] & [-CP] \\ | & | \\ [[\dots \sigma] & [\sigma \dots]] \end{array} \quad \begin{array}{cc} [-CP] & [+CP] \\ | & | \\ [[\dots \sigma] & [\sigma \dots]] \end{array}$$

Therefore the filling-in of default [–CP] must take place after the formation of compounds and clitic groups.³⁰

FLOATING [+CP] IN WHOLLY FLAT WORDS

4. According to the present analysis, AzJA has two sources in underlying representations for emphatic spans: floating [+CP], and [+CP] which is associated with a particular (non-initial) syllable. Formally, the analysis allows for the possibility that [+CP] could be underlyingly associated with an initial syllable, and this would have the same surface manifestations as it would if it were floating. Thus the two conceivable underlying forms in 23 would both give *RAZI* ‘satisfied’, though in 23a the prosodic unit is floating and in 23b it is associated with the first syllable:

$$(23) \begin{array}{cc} \text{a. } [+CP] & \text{b. } [+CP] \\ \sigma & \sigma \\ \sigma & \sigma \\ \downarrow & \downarrow \\ \downarrow & \downarrow \\ ra & zi \end{array}$$

Nevertheless, there is evidence to show that it is structures like 23a that occur, not structures like 23b. This evidence will be presented in the following sections.

4.1. DERIVATIONAL PREFIXES. AzJA has only three derivational prefixes.³¹ Two are noun prefixes: *na-* ‘negative’, and *m(V)-*, which derives nouns from verb roots. In addition, causative verbs are derived with the prefix *m-*, which

³⁰ Thanks to Mark Aronoff and an anonymous referee for pointing out the implications of bi-directional spreading in compounds.

³¹ The few inflectional prefixes in AzJA all consist of single consonants, syllabified with the first syllable of the following stem. It follows that inflectional prefixes are emphatic if the first syllable of the stem is emphatic, and are plain otherwise. This will be true regardless of how these stems are represented lexically; therefore no argument about underlying representations can be made from inflectional prefixes.

behaves as if it were the first consonant of a root. All three prefixes are neutral as to emphasis harmony—they are emphatic before emphatic stems, plain before plain stems:

- | | | |
|------|-------------------------------------|-----------------------------------|
| (24) | <i>xoš</i> 'good, pleasant' | <i>na-</i> negative |
| | <i>HĀQ</i> 'right' | <i>naxoš</i> 'ill, sick' |
| | <i>RAZI</i> 'satisfied' | <i>NAHĀQ</i> 'wrong' |
| | | <i>NARAZI</i> 'unsatisfied' |
| (25) | <i>sakone</i> 'abide' | <i>m-</i> noun |
| | <i>DAROŠE</i> 'preach, teach Torah' | <i>maskan</i> 'abode' |
| | | <i>MIDRAŠ</i> 'school' |
| (26) | <i>pyala</i> 'fall' | <i>m-</i> causative verb |
| | <i>šatoe</i> 'drink' | <i>mapole</i> 'cause to fall' |
| | <i>MYASA</i> 'suck' | <i>maštōe</i> 'give drink, water' |
| | <i>RADOXE</i> 'boil (intr.)' | <i>MAMOSE</i> 'give the suck' |
| | | <i>MARDOXE</i> 'boil (trans.)' |

The fact that prefixes alternate in emphasis—as would be expected from the informal generalization that a word is emphatic or plain as a whole—follows formally from the assumption that a floating autosegment spreads automatically in both directions throughout the word.³²

Our formal analysis, however, would allow for the possibility that an autosegment could be underlyingly associated with the first syllable of a stem. Thus, from the form of the word *RAZI*, we cannot tell whether [+CP] is lexically floating, as in 23a, or associated, as in 23b. The difference will show up when a prefix is added; the floating autosegment in 23a will associate in both directions, affecting the whole word including the prefix and yielding *NARAZI*; but the associated autosegment in 23b would spread only to the right, producing the incorrect form **naRAZI*. The published corpus contains no example of a prefixed form like **naRAZI*; so we have no evidence for the existence of an underlying structure like 23b, with an autosegment linked to the initial syllable.

4.2. NON-CONCATENATIVE MORPHOLOGY. All verbs and some nouns have non-concatenative morphological structures of the standard Semitic type. After prefixes and suffixes are removed, these stems can be analysed into two recurring parts: one part is the root, which consists of two, three, or four non-syllable segments (consonants, *w*, or *y*), while the other part is a vowel or a sequence of vowels. It is the root, not the vowels, that determines whether the word will be emphatic or plain, as the following examples illustrate (forms other than the imperative are in 3sg. masc.)

³² To say that the spreading is in both directions is imprecise—since the autosegment, being originally unassociated, has no determinate original location from which to spread. In the phonologies of some languages, a floating autosegment must first 'dock' in a particular location, and then spread (if spreading is called for) from there. (I thank Morris Halle for the term 'docking' and for calling my attention to this issue.) In AzJA, the mechanism by which a floating [+CP] becomes associated with all the syllables of a word is of no consequence.

	DURATIVE	IMPERFECTIVE	PERFECTIVE	IMPERATIVE
(27) 'receive'	<i>qabole</i>	<i>qabil</i>	<i>qbílle</i>	<i>qbul</i>
'write'	<i>kalowe</i>	<i>kaliw</i>	<i>klíwle</i>	<i>klu</i>
'go out'	<i>PALOTE</i>	<i>PALIT</i>	<i>PLÍTLE</i>	<i>PLUT</i>
'greet'	<i>BAROXE</i>	<i>BARIX</i>	<i>BRÍXLE</i>	<i>BRUX</i>

(28) Roots: *qbl, klw, PLT, BRX*
 Stem vowels: *ao, ai, i, u*
 C/V Skeletons: CVCVC+V, CVCVC, CCVC+CV, CCVC
 Suffixes: *e, le*

If the root is emphatic, all inflectional suffixes will be emphatic also; the Durative and Perfective forms here illustrate this, and it is demonstrated more extensively in §3.3. Likewise, when a root is shared by two or more words (which are thus derivationally related), then if one is emphatic, all will normally be emphatic.³³ For each root in the following examples, a verb and one or more associated nouns or adjectives are given:

- | | |
|------------------------------|------------------------------|
| (29) <i>myala</i> 'die' | <i>mola</i> 'death' |
| | <i>melana</i> 'mortal' |
| | <i>molana</i> 'plague' |
| <i>yaroxe</i> 'become long' | <i>yirxa</i> 'length' |
| | <i>yarixa</i> 'length' |
| <i>xarope</i> 'become sharp' | <i>xarupa</i> 'sharp' |
| | <i>xaripula</i> 'sharpness'. |
| (30) <i>SALHOE</i> 'succeed' | <i>SALHYANA</i> 'successful' |
| <i>PATOXE</i> 'become flat' | <i>PITXA</i> 'flatness' |
| | <i>PATUXA</i> 'flat' |
| <i>XAMOSE</i> 'become sour' | <i>XAMUSA</i> 'sour' |
| | <i>XAMISULA</i> 'sourness' |

Although the underlying source of emphasis can be attributed to the root, it cannot be localized (synchronically) to any individual segment. This is the consequence of an interesting property of the AzJA lexicon—interesting for both its formal structure and its historical background. Part of the vocabulary has the familiar Semitic discontinuous morphological structure, containing a consonantal root and a vocalic pattern, but another part has stems which cannot be analysed into a recurring root and vowel pattern. Nouns and adjectives in AzJA may have the root-and-pattern structure or not, but all verbs have discontinuous root-and-pattern morphology.³⁴ Some nouns with unanalysable stems are mixed—i.e. part emphatic, part plain—but no word with a discon-

³³ The few exceptions are discussed below in §5.

³⁴ Interestingly, the same is true in Hebrew and Arabic. This is explicitly stated by Sasse (70, 76–7) with reference to an Arabic dialect which, like AzJA, has extensive vocabulary borrowed from Kurdish and Turkish.

tinuous root and pattern is mixed.³⁵ For a word to be mixed, it must have the autosegment [+CP] underlyingly associated with some (non-initial) part of the stem. In AzJA, [+CP] associates with syllables. But a root is an unpronounceable sequence of consonants, and so cannot be syllabified; hence a root in isolation cannot include an ASSOCIATED feature [+CP]. If a root is emphatic, then [+CP] must be floating, and words based on it will be emphatic throughout.³⁶

4.3. BIDIRECTIONAL ASSIMILATION IN COMPOUNDS. Assimilating compounds, that is, stems formed by compounding a plain stem and an emphatic one in which the whole becomes emphatic, have been discussed above. One additional fact about such compounds is relevant here: assimilation occurs in either direction, left-to-right or right-to-left. In addition to the compounds listed above in 21, a striking instance is the following. From *xwara* 'white' and *DIQNA* 'beard', two compounds are formed, in the two possible sequences, both meaning 'old man': *DIQNAxwara* and *xwardiqna*; assimilation occurs in both sequences. If [+CP] in a word like *DIQNA* were underlyingly associated, then

³⁵ Since there are approximately 675 verb roots, and 2% of the vocabulary is mixed, one should expect thirteen or fourteen mixed verbs, plus some number of mixed non-concatenative nouns and adjectives.

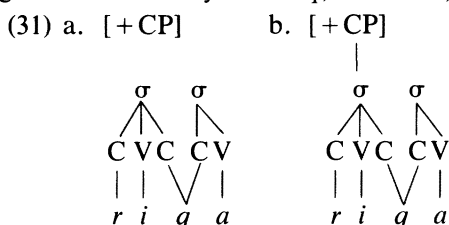
The historical background of this is worth mentioning. All native Aramaic words in AzJA are harmonic, either emphatic throughout or plain throughout. That means that [+CP] in native words is always floating. Some borrowed nouns and adjectives are mixed—as part of an effort by speakers of AzJA to reproduce, with the means available in their own sound system, the quality of the original vowels and consonants in the source language (Garbell 1964). With verbs, however, the reproduction of the original vowel quality is not possible. When foreign words become AzJA verbs, they must be reanalysed to fit the AzJA conjugational system, which is based on vocalic patterns that express inflectional categories. The lexical representations of (regular) verbs in AzJA need not contain any vowels, because the vowels are entirely predictable from the inflectional category and the phonological shape of the root. (This is unlike more conservative Semitic languages, including other modern Aramaic dialects, where various vocalic patterns are available, and the correct choice for a particular verb must be lexically specified.) In creating an AzJA verb from a foreign word, several consonants are extracted to create a new root, discarding the vowels. For example, from the Kurdish word *çaqu* 'pocketknife' comes the AzJA verb root *č-q-y* 'to cut'. (On 'extraction' as a language-internal process in another Semitic language, see Bat-El 1986.) Therefore a borrowed verb retains no original vowels whose quality might be reproduced, and it is free to conform to the native pattern of complete harmony.

In the alternative analysis in which [CP] associates with segments, not syllables, this history has a direct formal analog. The opaque segment *A*, underlying marked [+CP], does not occur in the non-concatenative portion of the vocabulary. It is limited to the borrowed vocabulary, as a non-native underlying segment; the vowel patterns which function in non-concatenative morphology are all native Aramaic morphemes, and as such do not contain the opaque emphatic *A*. (If a vowel pattern containing opaque *A* existed, there would be some verb form—a tense, aspect, or mood—or some noun pattern in which plain roots always produced mixed plain-emphatic forms. No such category exists.)

³⁶ Root consonants in AzJA do not alternate between emphatic and plain; if some did, then we could identify the non-alternating emphatic consonants as the underlyingly emphatic parts of the root. This is in fact possible in other dialects of Neo-Aramaic and in Arabic (cf. Lehn 1963, Broselow 1976:34, Card 1983:103–7), where emphasis is associated with individual segments—but not in AzJA, where emphasis is associated with syllables.

left-to-right spreading would follow automatically to produce *DIQNAXWARA*; but right-to-left spreading for *XWARDIQNA* would require some additional mechanism. But spreading in both directions is automatic if a word like *DIQNA* has an underlyingly floating [+CP], which will spread throughout the compound word in both directions.

4.4. THE MORPHEME STRUCTURE CONSTRAINT. The final argument for floating [+CP] is quite simple. Let us assume the contrary for a moment; then a wholly emphatic word like *RIQQA* ‘distant’ would have [+CP] associated in underlying form with the syllable *riq*, as in 31b, rather than floating, as in 31a:



However, the Morpheme Structure Constraint (9) stipulates that the vowel of a syllable underlyingly associated with [+CP] must be *a*. In order to allow for the numerous emphatic words like *RIQQA* which have vowels other than *a* in their initial syllables, the constraint would have to be revised so as to apply only to non-initial syllables. This added complexity has no other motivation; it would be an ad-hoc move taken to avoid the necessity of allowing the floating prosodic unit.

4.5. SUFFIXES WITH FLOATING [+CP]. It has been shown that stems in AzJA may be plain, emphatic, or mixed—derived from underlying forms with no specification of the feature [CP], with floating [+CP], and with [+CP] associated with a specific non-initial syllable. We have already seen examples of suffixes of the first two types. A suffix unspecified for [CP] is neutral, and matches in emphasis the stem to which it is affixed; a suffix associated with [+CP] is always emphatic, but does not affect the stem one way or another. The analysis presented here predicts that, just as some wholly emphatic words exist with a floating [+CP], there should also be suffixes with floating [+CP]. There is evidence for at least one such suffix, *-ISTAN* ‘country’. When this suffix is affixed to a plain stem, the entire word is emphatic:

- (32) *xaraba* ‘ruined’ *XARABISTAN* ‘deserted, ruined place’
 čol ‘uninhabited land’ *ČOLISTAN* ‘wilderness’
 hind ‘India’ *HINDISTAN* ‘India’

5. LEXICALLY SPECIFIED ALTERNATIONS OF EMPHASIS. AzJA has a fair number of irregular inflectional or derivational forms, and among these are a small number of lexically specified alternations of emphasis. This means that, for a given root or stem, some inflectional or derivational forms are emphatic and others plain. In these cases, a regularity can be observed as to which forms are emphatic and which plain: plain forms are normally basic or general, while emphatic forms are specialized or more narrowly restricted. Unmarked forms

³⁸ In §3.5, I have treated several words containing the element *XANA* as compounds, although Garbell regards *XANA* in these forms as a suffix (JNADPA 48). If these are indeed suffixed forms, then the suffix *XANA* behaves in some words as if the autosegment [+CP] were floating and in others as if it were associated (cf. fn. 29).

of each pair, though they share a root or a stem, are separate lexical items.³⁹ The lexical representation of the derived nouns and adjectives will include a specification of [+CP], although the root or basic stem does not. Types 33a–b, however, involve inflectional relationships, and inflectional forms are not normally listed in the lexicon. It is interesting, therefore, that each of the items of types 33a–b is irregular, not just in emphasis, but also in segmental shape. The expected imperatives of the roots *q-y-m* and *Ø-d-y* would be **qum*, **qúmun* and **(e)di*, **(e)dímun*; moreover, imperatives with *-lox*, *-lax* exist for only three verbs: these two and *izala* ‘to go’ (JNADPA 71–2; however, *-lox*, *-lax* have several other functions in the verbal system). The expected plurals of *bela* and *brata*, respectively, would be **bele*, and **bre* or **brate*. Therefore these imperatives and plurals must be specifically listed as sub-entries in the lexicon, in addition to the general entry for the words; a specification of [+CP] is part of the particular lexical representation of the imperative or the plural, but not of the general representation for the word. No lexical entry in AzJA (including sub-entries for irregular inflectional forms) is required merely to specify irregular emphasis: idiosyncratic emphasis occurs only in forms which are listed in the lexicon anyway, either as separate words or as segmentally irregular inflectional forms.

CONCLUSIONS: EMPHASIS AND MARKEDNESS

6. The spreading of emphasis in AzJA is not the same as vowel harmony, because it affects both vowels and consonants. However, its phonological behavior is very similar to that of vowel harmony in most other respects. Clements (1977b:112) has listed five properties commonly found in vowel harmony systems in a wide variety of unrelated languages. These properties are:⁴⁰

- (a) ‘Phonetic motivatedness’: Vowels must match in terms of a small number of phonetic features, not in terms of arbitrary sets.
- (b) ‘Root control’: Roots control affixes, but affixes do not usually control roots.
- (c) ‘Bidirectionality’: Both prefixes and suffixes, if the language has them, harmonize.

³⁹ In type 33d, the verbs are all native Aramaic, but the nouns and adjective are borrowed from cognate words in Arabic or Hebrew; the expected native forms would be **zara*, **bannaa*, **qay(y)ama*, **qurbana*. Except for *QURBAN*, however, there is no reason to doubt synchronic derivational relationships between the words of these pairs.

⁴⁰ Clements points out that these essentially follow the findings of Ultan 1973. Anderson 1980 has shown that this set of properties does not adequately distinguish vowel harmony from other assimilation processes. According to him, some vowel harmony systems lack properties (a), (b), (c), and (e); but some assimilation rules other than vowel harmony have property (d) as well as all the others. Clements & Sezer (251–2, fn. 1) have argued against some of Anderson’s objections. Furthermore, Anderson concedes (13) that ‘Clements’ criteria point up important characteristics shared by most vowel harmony systems.’ Any system that has all of Clements’ properties certainly has much in common with the most typical cases of vowel harmony.

(d) 'Unboundedness': The domain of harmony is not limited to a specific number of syllables, but applies throughout the word.

(e) 'Non-optionality': Vowel harmony applies obligatorily.

The spreading of emphasis in AzJA has all these properties, and this is what justifies our calling it a harmony system.⁴¹ True vowel harmony is, then, a special case of the more general class of harmony systems; and the statement of Clements & Sezer (217), that 'in all known vowel harmony systems the class of P-bearing units ... is the class of vowels', if not a tautology, is simply a definition of true vowel harmony. Even in Turkish, as Clements & Sezer show in detail, consonants are intimately involved in the harmony system.

In the present analysis of emphasis harmony in AzJA, the negative value of the feature [CP] does not generally appear in underlying representations. The omission of [−CP] from underlying forms is not merely for economy of representation, or to express the notion that emphasis is universally or necessarily marked relative to the absence of emphasis. It is required in order to account formally for a wide range of facts:

(i) Numerous mixed stems exist in which the order is plain–emphatic, but only one with the order emphatic–plain.

(ii) No mixed words exist with three parts, either emphatic–plain–emphatic or plain–emphatic–plain.

(iii) Most suffixes alternate in emphasis depending on the stems to which they are attached, and some non-alternating suffixes are always emphatic; but no non-alternating suffixes exist which are always plain.

(iv) Some compound words formed of one inherently emphatic stem and one plain stem assimilate in emphasis, so that the whole compound is emphatic; but no compound assimilates so that the whole is plain.

If the negative value of the feature [CP] figured in underlying representations on a par with the positive value, then these facts would require separate mechanisms or stipulations in the grammar of the language. Therefore the negative feature [−CP] MUST be omitted, to account in a unified way for important structural properties of the language. Furthermore, if we allow the usual assumptions of markedness theory—that phonological simplicity should be associated with relative frequency, and with morpho-semantic basicness—then the marking in the lexicon of emphasis (but not of its absence) makes sense of two additional properties of emphasis in AzJA:

(v) Emphatic words are only about half as numerous as plain words in the lexicon (and make up an even smaller portion of the words in a text).

⁴¹ The system of emphasis harmony in AzJA has properties of both 'symmetrical' and 'asymmetrical' harmony systems (Clements & Sezer, 215–16, following Aoki 1968). It shares with symmetrical harmony systems the characteristics that 'roots do not [generally] alternate, and alternating affixes agree with the category of the nearest non-alternating vowel'. It is like asymmetrical harmony systems in that 'alternating forms assimilate to a single ("dominant") value of the harmony category if and only if a non-alternating morpheme of that value appears in the word.' The 'dominant value of the harmony category' in AzJA is of course emphasis or [+CP].

(vi) Whenever a root or stem exhibits an idiosyncratic, lexically specified alternation of emphasis in inflection or derivation, the more basic (or general) form is plain, while the derived (or more narrowly restricted) form is emphatic.

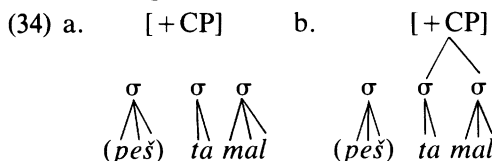
Several of these facts are instances of a general pattern: plain spans frequently become emphatic—sometimes by regular morphophonological processes, sometimes idiosyncratically—but emphatic spans never become plain.⁴² Unmarked syllables may become emphatic by spreading from an adjacent emphatic syllable, or by special lexical stipulation; but once a syllable has been assigned a value for [CP], it never changes that value.

The facts about idiosyncratic root alternations (§5) show that the general pattern—that plain spans may become emphatic, but emphatic spans may not become plain—applies not only in the construction of an individual word, but also in sets (or rather hierarchies) of words which are derivationally or inflectionally related. Thus a plain stem may (rarely) become emphatic when a derivational suffix is added to it, and a plain root may occasionally have an emphatic derivative; but emphatic stems or roots do not normally have plain derivatives. Likewise, a plain lexical item may have an emphatic form in a marked inflectional category, but not the other way around. Though the analysis presented here makes these facts plausible, it does not predict them in any formal way. This is because root alternations of emphasis in AzJA are all idiosyncratic and irregular, and hence must be lexically specified. For example, the verb *qyama* ‘to stand’ is not marked [+CP], so most of its forms are plain; however, the Imperative is not the expected **qum*, but *QU*, which must be lexically specified as to both the lack of final *-m* and the presence of [+CP]. It would be just as simple, formally, if the main entry of the verb were specified [+CP], and the Imperative were listed separately, with no specification for emphasis. Then most forms of the verb would be emphatic, and the Imperative plain. But the language does not work that way; ‘Once emphatic, always emphatic’ holds true even among sets of derivationally and inflectionally related words.

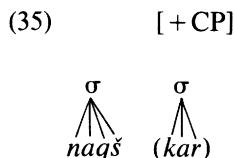
In the analysis of stress, syllabification, and tone, it has frequently been observed that initial or final syllables are ignored in the application of phonological rules or conventions. Kiparsky (117–22) has extended the notion of extraprosodic syllables to the autosegmental analysis of vowel harmony, to account for words in which an initial or final syllable fails to harmonize. Let us explore the possibility of using this approach to handle mixed words in AzJA, e.g. *pešTAMAL* ‘towel’. The syllable *peš* would be marked as extraprosodic in underlying form (indicated here with parentheses), and the emphasis feature

⁴² Emphasis is dominant over its absence in Arabic too, as pointed out by Ferguson (1956:160): ‘In general, wherever an emphatic and a non-emphatic consonant would be expected, either for historical reasons or on synchronic morphological grounds, to occur immediately next to or in the neighborhood of each other, the non-emphatic tends to appear as an emphatic. The exact scope of “neighborhood” varies from dialect to dialect and depends also on the particular consonants involved, but the phenomenon is worth pointing out, since it has sometimes been said that emphasis is not neutralized in Arabic.’

would be floating:



Because the syllable *peš* is extraprosodic, the feature [+CP] would be prevented from associating with that syllable, and the correct form *pešTAMAL* would result as in 34b. This analysis fits Kiparsky's characterization of extraprosodic units in that only a single syllable is designated as extraprosodic, and it is located in a peripheral position (word-initial). Furthermore, inherently emphatic suffixes like *-KAR*, as in *naqšKAR* 'engraver' from *naqš* 'engraving', might also be extraprosodic (cf. 18–20). In such a case it is the suffix that would be marked with a floating [+CP], as in 35, and the fact that the suffix is extraprosodic would keep [+CP] from associating with the stem *naqš*:



The advantage of this approach is that the distinction between underlying associated and floating [CP] is eliminated. However, this approach fails to account for four properties of the AzJA harmony system. First, if extraprosodicity is available to handle inherently emphatic suffixes like *-KAR*, then there should also be inherently plain suffixes—extraprosodic, but unmarked for emphasis. For a hypothetical illustration, suppose there is an extraprosodic suffix *-tar* that may be affixed to an emphatic stem like *RAZI*: thus *RAZI + (tar)*. The result would be *RAZItar*. The extraprosodicity analysis predicts that such suffixes should exist; but in fact there are none. Second, if there can be extraprosodic initial syllables as in *(peš)TAMAL*, there should also be extraprosodic final syllables; thus the word *YASmin* could be handled as *YAS(min)*. The prediction would be that extraprosodic initial and final syllables should exist in approximately equal numbers; but, in fact, the ratio is 71 to 1. Third, there is no a-priori reason for a word not to have extraprosodic syllables both initially and finally, e.g. **(peš)TA(mal)*; but, in fact, there are no such three-part mixed words. Finally, while extraprosodicity is limited to single units (Kiparsky, 118), AzJA has words in which two syllables are immune to the spreading of [+CP]: *galimBAĴĬ* 'brother's wife', *seyfulLAH* 'a great deal', *eliYAHU* (a proper name). I conclude that the extraprosodic treatment of mixed words will not account for the full range of facts in AzJA; therefore there must be an underlying distinction between associated and floating emphasis features.⁴³

⁴³ I am grateful to Robert Vago for calling my attention to the extraprosodicity approach, and for exploring its implications with me.

From the viewpoint of the language learner, the existence of two types of underlying forms, associated and floating, makes sense. When children learning AzJA encounter a new word for the first time, they know that it must be either plain throughout, emphatic throughout, or mixed. For each of these possibilities, they choose the simplest possible underlying representation. Corresponding to each possible pronunciation, only one structure is available: plain words have no specification for the feature [CP], wholly emphatic words have floating [+CP], and mixed words have [+CP] associated with the first emphatic syllable. There is no overlap; in particular, no underlying form is possible in which [+CP] is associated with the first syllable.⁴⁴

The fundamental difference between the phonology of emphasis in AzJA and that in conservative Aramaic and Arabic dialects is that AzJA has lost the distinction between underlying emphatic and non-emphatic consonants. However, this difference would be less noticeable if it were not for the most striking characteristic of emphasis harmony in AzJA: that mixed words—those which are part emphatic, part plain—make up a very small proportion (about 2%) of the vocabulary. Most words are emphatic or plain as wholes. This characteristic indicates a strong preference for floating autosegments over underlyingly associated ones. Moreover, the Morpheme Structure Constraint (9) requires that underlyingly associated [+CP] be linked to a syllable with the vowel *a*. This constraint does not apply to a floating autosegment. It is because non-initial emphasis is limited in these two separate ways that emphasis in AzJA is so noticeably different from emphasis in Arabic, and at the same time so similar to vowel harmony.

APPENDIX

Garbell (1965b:33) describes the phonetics of emphasis (which she calls 'flattening') in AzJA as follows:

'Flat phones are produced in contrast to plain ones in the following manner: all oral consonants are strongly velarized; labials are produced with a marked protrusion and rounding of the lips; *r* is actualized as a trill [rather than an "apical-alveolar lax voiced flap" as in plain contexts]; in the production of *p*, *t*, *k* the glottis is entirely closed in S [the southern subdialect] and only slightly opened in N [the northern subdialect]; all consonants (including *h*) are more or less pharyngealized according to the individual speakers; the high and mid vowels *i*, *u*, *e*, *o* have markedly lowered on-glides and/or off-glides in contact with consonants; the rounded vowels have no fronted allophones in N [as they do in plain words]; the allophones [i] and [ə] of /i/

⁴⁴ I am assuming here that a phonological representation with a floating autosegment is simpler than one in which the same autosegment is associated with a particular syllable. Ex. 31a is simpler than 31b because it conveys less information: a floating [+CP] says that something in the word is emphatic, while an associated [+CP] says that something in the word is emphatic and moreover specifies which part of the word that is. Thus Clements (1977a:57) proposes that, 'all else being equal, a phonological representation is simpler than another to the extent that it contains FEWER SEGMENTS OF FEWER ASSOCIATION LINES.' This is to suggest that a child would choose 31a over 31b despite the fact that the evidence for floating emphasis comes from observations which the child would not necessarily make early in the language learning process—a few prefixes, compounds, and the absence of mixed words with non-concatenative morphology. Furthermore, the relative paucity of mixed words in the lexicon suggests that associated [+CP] is in some way more marked than floating [+CP]. Note, however, that nothing in the formal analysis presented here depends on this assumption of relative simplicity.

are replaced by central [i], and in contact with labials by "back-central" [u]; the allophones [a], [ʌ] and [ɑ] of /a/ are replaced by [a] and [ɒ] respectively; all vowels are more or less pharyngealized according to individual speakers.'

In a separate paper on the same subject (1964:88) G adds 'a backward shift of the localization of dentals, alveolars, palatals, and velars', and comments: 'It follows that the consonants least affected by "flattening" are the uvular plosive [q] (with its fricative allophone in N) and the laryngeal fricative [ħ].'

To summarize this description, emphasis in AzJA consists of velarization, pharyngealization, glottalization, labialization, backing and lowering of vowels, and the trilling of *r*. In Arabic and Neo-Aramaic dialects, emphasis is characterized by a similar mix; descriptions like G's have been given by Lehn (1963), Hetzron (1969:113–14), Jušmanov (1938), and many others. Ghazeli (1977:76) concludes: 'The speaker may thus use different articulatory strategies to achieve the required perceptual difference' between emphatic and non-emphatic consonants. Note especially Hetzron's phonetic transcriptions of a minimal pair (in the Christian Aramaic dialect): [muddartelæ] 'she has dared', [mūddurtelā] 'she has given back', both with the surface-phonemic segmental representation *muddartela*, the former plain, the latter emphatic. The literature on the articulatory phonetics of emphasis in Arabic is surveyed by Card (1983:13–17).

Phonological features for pharyngealization which have been proposed in the literature at one time or another include [+flat], [+low, +back], [– Advanced Tongue Root], [+ Retracted Tongue Root], and [+F2drop] (see Card for full references and discussion); the feature [Constricted Pharynx] or [CP], which I adopt, is from Broselow (1976:xv), following work of Halle and Stevens. The notion that, despite the complexity of its phonetic character, emphasis consists fundamentally of pharyngealization is supported by the physiological and acoustic evidence summarized by Card (14). However, a formalization of the AzJA system in full detail would have to say that the prosodic melody unit is a feature complex including, for emphatic spans, [+CP, +back, +round, +ejective, +heightened subglottal pressure], and for plain pieces, opposite values for all of these features together. (The feature [+round] is for the additional lip protrusion and rounding of emphatic labial consonants, following Chomsky & Halle 1968:309. It is not quite right because it falsely implies that all emphatic vowels are rounded; nevertheless, this is not the place to propose alternatives. The feature [+heightened subglottal pressure] is for the trilled *r* (Chomsky & Halle, 318); conceivably it applies to all segments, and is what gives 'emphasis' its name.) 'Mixing' of the feature values does not occur (at least at this abstract level); this means there is no such thing as, for example, [+CP, –back, +round, –ejective, +heightened subglottal pressure]. Since all segments are affected by pharyngealization, we may say that there are no segments formally transparent to the spreading of the feature [+CP], but each of the other features affects only certain kinds of segments: only labials are affected by [+round], only voiceless stops by [+ejective], only oral consonants and vowels other than *e* are affected by [+back], and perhaps only *r* is affected by [+heightened subglottal pressure]. It seems reasonable to say that many of these restrictions are to be stated at the superficial level where the inventory of phonetic elements of the language are specified, in part constrained by universal properties of phonetic systems, rather than as settings of the parameters of an autosegmental system. For instance the restriction of [+ejective] to voiceless stops and its exclusion from all other segments is not a formal property of the pattern of autosegmental spreading in AzJA, as glottalization is physiologically restricted to voiceless segments, and tends to apply to stops in preference to continuants. The phonetic description of the language will specify that there are no glottalized continuants, and that, in producing the glottalized stops, 'the glottis is entirely closed in S and only slightly open in N'.

The relationship of pharyngealization to the other phonetic components of emphasis is perhaps like the relationship of the feature [tense] to other phonetic effects of Irish lenition, discussed by Malone 1986, who calls the other features associated with lenition 'servo-features'. Such co-operation of clusters of features has been examined in recent studies of the internal constituent structure of feature complexes (see Clements 1985).

Because of the fundamental importance of pharyngealization in emphasis, and in order to simplify the exposition in the rest of this paper, I write only the feature [+CP] or [–CP], but these are to be understood as standing for [+CP, +back, +round, +ejective, +heightened subglottal pressure] and [–CP, –back, –round, –ejective, –heightened subglottal pressure] respectively.

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