1979

The abstract consonant in Seri

Stephen A. Marlett
SIL-UND

[How does access to this work benefit you? Let us know!](#)

Follow this and additional works at: <https://commons.und.edu/sil-work-papers>

Part of the [Linguistics Commons](#)

Recommended Citation

Marlett, Stephen A. (1979) "The abstract consonant in Seri," *Work Papers of the Summer Institute of Linguistics, University of North Dakota Session*: Vol. 23, Article 4.

DOI: 10.31356/silwp.vol23.04

Available at: <https://commons.und.edu/sil-work-papers/vol23/iss1/4>

This Article is brought to you for free and open access by UND Scholarly Commons. It has been accepted for inclusion in Work Papers of the Summer Institute of Linguistics, University of North Dakota Session by an authorized editor of UND Scholarly Commons. For more information, please contact und.commonson@library.und.edu.

THE ABSTRACT CONSONANT IN SERI¹

Stephen A. Marlett

1. Introduction
2. Prefixes indicating tense
 - 2.1. Overview of Seri verb morphology
 - 2.2. Regular verbs
 - 2.3. 'Irregular' verbs and a concrete solution
 - 2.4. Abstract solution
3. Other prefixes
 - 3.1. Causative prefix
 - 3.2. Passive prefix
 - 3.3. Imperative prefix
 - 3.4. Action nominalizer
 - 3.5. Object nominalizer
 - 3.6. Third person referent clitic
4. Comparison

1. Introduction

The hallmark of generative phonology has been the postulation of unique underlying representations for morphemes and the derivation of surface allomorphs by means of a set of rules. In order for these rules to have the greatest generality possible, a number of linguists have proposed solutions involving underlying segments that never reach the surface with the same feature specifications that they had at the underlying level. These 'abstract' solutions have generally posited segments whose features are fully specified. Some well-known abstract solutions include: Yawelmani /i:/ and /u:/ (Kuroda 1967; Kisseberth 1969); French /h/ (Schane 1968; Selkirk and Vignaud 1973); Nupe /æ/ and /ɔ/ (Hyman 1970); Maltese Arabic /ʕ/ (Brame 1972); and Hungarian /ɰ/ and /ʏ/ (Vago 1973). The features of an 'abstract' segment are usually discoverable from the surface forms which it underlies. This segment is also sometimes seen to fill a gap in the system of underlying segments, which evidence may be used to confirm its identity.

Abstract solutions have generated an abundance of discussion and some alternative proposals have been presented for most of the above analyses. Arguments have also been given to the effect that solutions with absolute neutralization are simply incorrect and that alternative concrete, morphological solutions are always preferable. In this paper I will present a case for positing an abstract segment in Seri, a Hokan language of northwestern Mexico. I will show that the motivation for this analysis is multiple and that such a solution is preferable to a concrete analysis. The abstract solution will be shown to be theoretically significant because the identity of the segment cannot be determined from the synchronic evidence; it is a truly abstract solution.

In section 2.1-2 I will first introduce the type of allomorphy that typically occurs with the prefixes that indicate tense. In section 2.3 a class of verbs which are superficially very aberrant will be examined, and a rule feature analysis will be developed. An abstract analysis will be proposed in section 2.4. Various other alternations will be examined in section 3 and the two solutions will be simultaneously developed. Finally I will compare the solutions and discuss the consequences of adopting the abstract analysis.

2. Prefixes indicating tense

2.1. Overview of Seri verb morphology

The finite Seri verb is inflected for object person, subject person, tense, number, and aspect, as well as other things which will be discussed as they are introduced. The finite verb is basically composed as shown in (1).

(1) (Object Person)-Subject Person-Tense-Root-Number/Aspect

Since most of the forms cited below will have third person singular objects, marked by a zero prefix, I will not discuss the object prefixes, nor will I gloss the third person object prefixes below. The subject person prefixes, which mark final subject, are given in (2).²

- (2) 1 sg. ?- (tr.) ?p- (intr.)
 2 sg. m-
 3 sg. ∅-
 1 pl. ?a-
 2 pl. ma-
 3 pl. ∅-

These prefixes are illustrated with two verbs in (4). The initial i in the first and second person singular forms is epenthetic--a consonant cluster whose first member is glottal stop or a nasal consonant cannot be preceded by a consonant or a pause. The following rule inserts an i when these conditions arise. (The first consonant may be in a preceding vowel.)³

- (3) i Epenthesis: $\emptyset \rightarrow i / \left. \begin{array}{c} || \\ C \end{array} \right\} \text{---} \begin{array}{c} C \\ [-\text{obs}] \end{array} C$

(4) <i>did</i> ____ <i>tattoo him?</i>	<i>did</i> ____ <i>sleep?</i>
iʔ-t-ǎʃt	iʔp-t-í:m
im-t-ǎʃt	im-t-í:m
i-ø-t-ǎʃt	ø-t-í:m
ʔa-t-ǎʃt o	ʔa-t-í:ma
ma-t-ǎʃt o	ma-t-í:ma
i-ø-t-ǎʃt o	ø-t-í:ma

Finite verbs with third person subject and third person object are marked with the prefix /i-/, as shown in (4).⁴ I will refer to this prefix as the object marker. It precedes the tense markers in finite forms. The finite forms cited in this paper will be in the third person singular form unless otherwise noted.

The prefixes indicating tense are given in (5).

(5) Dependent clause

po- *future*

+- *nonfuture*

Independent clause

si- *future*

mi- *proximate nonfuture*

yo- *past*

χo- *emphatic nonfuture*

+- *interrogative nonfuture; narrative nonfuture*

tm- *abilitative*

These prefixes directly follow the subject person prefixes, as illustrated in (4). The forms cited in this paper will primarily be with the interrogative nonfuture (+-), past (yo-), and (independent) future (si-) prefixes since these illustrate the basic patterns that exist in the language.⁵

The verb is also marked to indicate the number of the final subject and whether the action is unitary or multiple (including iterative and sequential action). The number and aspect markings, which are not structurally separable, involve suffixation and/or stem modification.

Unless otherwise noted, verb stems will be singular/unitary and any suffixes will not be separated.⁶

Verbs in Seri are nominalized when they are embedded. When the subject of a nonfuture relative clause is coreferential with the head noun of the noun phrase, a form which I will refer to as the subject nominalized form occurs. The structure of this form is given in (6).

(6) Nominalizer-(Object Marker)-Root-Number/Aspect

The nonfuture nominalizer has three suppletive allomorphs, the distribution of which is conditioned by the morpheme that immediately follows it.

- (7) NOMINALIZER $\Rightarrow$ i / ____ NEGATIVE
 ʔa / ____ PASSIVE
 k / ____

These are illustrated by the forms in (8). The negative morpheme is -m- and the passive morpheme has the shape -p- in the following examples. The negative and passive morphemes follow the tense marker or the nominalizer in that order.

- (8) *tattoo* *be tall*
i-m-ášt	i-m-ákʷsɣax	he who is/does not ... (him)
i-m-p-ášt	-----	he who is/was not ... ed
ʔa-p-ášt	-----	he who is/was ... ed
k-í-št	k-ákʷsɣax	he who is/was ... (ing him)

The object marker occurs in the subject nominalized form whenever the clause is transitive, regardless of the person of the object, as shown in (9).

- (9) ʔim k-í-št *he who is tattooing me*
 ma k-í-št *he who is tattooing you (sg.)*

Since imášt *he who is not tattooing him* is transitive, the underlying form is /i-i-m-ašt/ (NOM-OM-NEG-tattoo). The surface form will be accounted for by rules that will be postulated below. The rules will likewise account for the surface form kíšt from underlying /k-i-ašt/.

2.2. Regular verbs

The verb roots in Seri are of a variety of shapes. The forms in (10) illustrate the most common allomorphs of the prefixes and roots. The verbs are subgrouped according to the initial segment of the root and, when significant, transitivity. The negative forms of some verbs are also given. When possible, morpheme breaks are indicated.

(10)

<u>root</u>		<u>Sub. Nom.</u>	<u>Interr.</u>	<u>Future</u>	<u>Past</u>
a. <u>Short low vowel</u>					
-eme	<i>be used up</i>	k-éme	t-éme	sí:-me	yó:-me
	Negative:	i-m-éme	t-m-éme	s-m-éme	y-o-m-éme
-ataχ	<i>go</i>	k-átaχ	t-átaχ	sí:-taχ	yó:-taχ
-aiχax	<i>be hard</i>	k-áiχax	t-áiχax	sí-iχax	yó-iχax
-ap	<i>sew basket</i>	k-í-p	i-t-áp	i-sí:-p	i-yó:-p
b. <u>Consonant</u>					
-meke	<i>be lukewarm</i>	k-méke	t-méke	s-méke	y-o-méke
-pí:	<i>taste</i>	k-pí:	i-t-pí:	i-s-pí:	i-y-o-pí:
-ya:	<i>have</i>	k-yá:	i-t-yá:	i-s-yá:	i-y-o-yá:
c. <u>Nonlow back vowel, intransitive</u>					
-otx	<i>arise</i>	k-ót x	t-ót x	s-ót x	yát x
-oxoš	<i>flee</i>	k-óx oš	t-óx oš	s-óx oš	yá x oš
-o:χi	<i>die</i>	k-ó:χ i	t-ó:χ i	s-ó:χ i	yáχ i
-o:ša	<i>talk (pl.)</i>	k-ó:ša	t-ó:ša	s-ó:ša	yáša
	Negative:	i-m-ó:ša	t-m-o:ša	s-m-o:ša	y-o-m-ó:ša
d. <u>Other vowel</u>					
-o:n	<i>carry</i>	k-ó:n	i-t-ó:n	i-s-ó:n	i-y-ó:n
-i:	<i>hear</i>	k-í:	i-t-í:	i-s-í:	i-y-í:
-is	<i>be raw</i>	k-ís	t-ís	s-ís	y-ís
-i:p	<i>carry on head</i>	k-í:p	i-t-í:p	i-s-í:p	i-y-í:p
-ip	<i>straighten</i>	k-í-ip	i-t-íp	i-s-íp	i-y-íp
-a:fk	<i>pound</i>	k-á:fk	i-t-á:fk	i-s-á:fk	i-y-á:fk
-e:mix	<i>move slowly</i>	k-é:mix	t-é:mix	s-é:mix	y-é:mix

I will present below the rules for the data in (10).

In Seri the first vowel of the root generally receives the primary stress. The rule is given as (11).

$$(11) \text{ Primary Stress: } V \rightarrow [+stress] / \begin{matrix} \text{root} \\ C_0 \text{ ---} \end{matrix}$$

Primary stress sometimes occurs on the prefix vowel in the surface forms in (10a), however. These verbs, whose roots begin with a short low vowel, are also those which give the most information about the underlying shapes of the prefixes. The object marker *i-* does not occur in the surface forms of the subject nominalized form of most verbs of the other subgroups. The *i* of the future prefix *si-* likewise does not occur in the surface forms of verbs which do not have short low vowel-initial roots. The vowel of the past tense prefix *yo-* occurs in these forms as well as with consonant-initial roots. It is important to compare (10a) with the passive forms of consonant-initial verb roots. Some forms of the verb *taste* are given below. The passive prefix is *-a?* before such roots.

$$(12) \begin{array}{ccc} \text{Interr.} & \text{Future} & \text{Past} \\ t-a?-p\acute{f}: & s-a?-p\acute{f}: & y-a?-p\acute{f}: \quad \textit{taste (passive)} \end{array}$$

Although the vowel of the passive prefix is a short low vowel, the vowels of the tense markers do not surface in these forms, unlike the forms in (10a). I propose for the verbs in (10a) that the root vowel receives the stress but the stress shifts from these vowels to a prefix vowel. A short low vowel then deletes when it follows a stressed vowel. The conditions for the deletion of the short low vowel are therefore not met by the forms in (12) since the passive prefix does not receive stress. The rules are given as (13) and (14) and a sample derivation is given in (16). The conditions for the lengthening of the prefix vowel are complicated and are not important to the argument; therefore I will not include the lengthening rule here.

$$(13) \text{ Stress Shift: } \begin{array}{c} V + \quad V \\ 1 \quad \quad 2 \\ \left[\begin{array}{c} +str \\ -lo \\ -lng \end{array} \right] \\ 2 \end{array} \Rightarrow \begin{array}{cc} [+str] & [-str] \\ 1 & 2 \end{array}$$

$$(14) \text{ Short Low Vowel Deletion: } \begin{array}{c} V \\ [+lo] \\ [-lng] \end{array} \rightarrow \emptyset / \begin{array}{c} V \\ [+str] \\ [-lo] \end{array} + \text{ ---}$$

(15)	UR	/k-i-ap/	/i-si-ap/	/i-yo-ap/	/yo-a?-pi:/
	Stress	kiáp	isiáp	iyóáp	yoa?pí:
	Shift	kíap	isíap	iyóap	-----
	SLV Del	kíp	isíp	iyóp	-----
	Other	---	isí:p	iyó:p	ya?pí:
	SR	kíp	isí:p	iyó:p	ya?pí:

Stress Shift (13) therefore feeds Short Low Vowel Deletion (14).

Although it might seem desirable to combine Stress Shift (13) and Short Low Vowel Deletion (14) into one simultaneous operation since they are so closely connected, there is at least one piece of evidence for keeping them separate. The verb *know* seems to be an exception to Short Low Vowel Deletion (14) (as well as Vowel Deletion (19) discussed below), but not to Stress Shift (13). Compare the forms in (16) where Stress Shift has applied but not Short Low Vowel Deletion. A transitional y is also inserted after Stress Shift has applied.

(16)	-a	k-íy-a	i-t-á	i-síy-a	i-yó-a
------	----	--------	-------	---------	--------

The i's of prefixes are deleted when they precede a consonant (with some qualifications, to be discussed below). Underlying /si-m-eme/ *it will not be used up* becomes sméme, and underlying /k-i-pí:/ becomes kpi:. See the data in (10b). The conditions on the rule deleting these i's are not entirely phonological because a verbalizing prefix -i- and the vowel of the possessive prefixes ?i- *my/our* and mi- *your* do not delete under the same phonological conditions. Compare the data below.

- (17) a. k-i-kéwK *he who has firewood*
 cf. ?a-kéwK *firewood (abs.)*
- b. ?i-s+ftx *my ear*
 cf. ?a-s+ftx *ear (abs.)*
- c. ?i-Ø-pí: *my tasting it* (1POSS-NOM-taste)

As G. H. Matthews has pointed out to me, the i's in (17) stand in front of forms that are subcategorized as nouns. The structures of (17a) and (17c) are given in (18).

- (18) N[k V[i N[kéwK]]]
 N[?i N[Ø V[pí:]]]

Therefore the deletion rule may be formulated as in (19).

$$(19) \text{ i Deletion: } i \rightarrow \emptyset / C \text{ ______ } \underset{V}{[} C$$

Ignoring the past tense forms in (10c) for a moment, and looking at the rest of (10c), (10d), and (12) together, we see that prefix vowels delete before a vowel. The rule is given as (20).

$$(20) \text{ Vowel Deletion: } V \rightarrow \emptyset / \text{ ______ } + V$$

As the form $\gamma\acute{o}i\chi a x$ in (10a) shows, Vowel Deletion (20) is disjunctively ordered with Short Low Vowel Deletion (14). It must also have some restriction such that the object marker $i-$ will not delete before stems beginning with stressed short i . As a result of this condition and a low level rule coalescing identical vowels, $k-\acute{f}-ip$ *he who straightens it* is homophonous with $k-\acute{f}:p$ *he who carries it on his head*.

Returning now to the past tense forms in (10c) we see that a prefixal $\acute{o}$ and a following $\acute{o}$ (long or short) coalesce to form a short $\acute{a}$ if and only if the form is intransitive (compare (10d)). The coalescence of these two vowels has a side effect on the consonant of the emphatic prefix $\chi\acute{o}-$. (The allomorph χ^w- arises only as a result of this rule.) Note the forms in (21), which correspond to (10c).

(21) Emphatic

$\chi^w\acute{a}tx$	<i>arise</i>
$\chi^w\acute{a}x\acute{o}\check{s}$	<i>flee</i>
$\chi^w\acute{a}\chi l$	<i>die</i>
$\chi^w\acute{a}\check{s}a$	<i>talk (pl.)</i>
$\chi\acute{o}-m-\acute{o}:\check{s}a$	<i>talk (pl., neg.)</i>

The necessary rule is given as (22).

$$(22) \text{ Coalescence: } \begin{array}{c} C \\ \langle +bac \rangle \\ 1 \end{array} + \begin{array}{c} V \\ \begin{bmatrix} +bac \\ -l\acute{o} \end{bmatrix} \\ 2 \end{array} \Rightarrow \begin{array}{c} V \\ \begin{bmatrix} +bac \\ -l\acute{o} \end{bmatrix} \\ 3 \end{array} \Rightarrow \begin{array}{cc} \langle +rd \rangle \emptyset & \begin{bmatrix} +l\acute{o} \\ -lng \end{bmatrix} \\ 1 & 2 \quad 3 \end{array}$$

Condition: The form must be intransitive.

Many verbs occur in pairs: transitive, with an object nominal implied or expressed, and detransitivized, without such an object nominal. The detransitivized forms of nonderived verbs are marked with the morpheme $-\acute{o}-$, which immediately precedes the root. Consonant-initial and short low vowel-initial roots are illustrated by the forms in (23).

- (23) -tis *point at* (T) k-tís i-t-tís i-s-tís i-yo-tís
 (D) k-o-tís t-o-tís s-o-tís ya-tís
 -ap *sew basket* (T) k-f-p i-t-áp i-sf:-p i-yó:-p
 (D) k-ó:-p t-ó:-p s-ó:-p yá-p

The morpheme -o- also causes a root-initial high vowel to lower and shorten, as seen by the following forms which have root-initial high vowels in their underlying representation. The o of the prefix is itself deleted by Vowel Deletion (20) in most cases. (This matter will be discussed in greater detail below.)

- (24) -i:p *carry on head* (T) k-f:p i-t-f:p i-s-f:p i-y-f:p
 (D) k-ép t-ép s-ép y-ép
 -iši *beat (as in contest)* (T) k-f-iši i-t-fši i-s-fši i-y-fši
 (D) k-éši t-éši s-éši y-éši
 -inx *yell at* (T) k-f-inx i-t-fnx i-s-fnx i-y-fnx
 (D) k-énx t-énx s-énx y-énx
 -oi *delouse* (T) k-ói i-t-ói i-s-ói i-y-ói
 (D) k-o-ái t-o-ái s-o-ái yá-ai

The rule that ablauts the root-initial vowel is actually triggered by several morphemes. For example, the infinitive prefix has two suppletive allomorphs: ika- when the verb is intransitive, and iʔa- when the verb is transitive. The transitive allomorph, but not the intransitive, triggers the ablaut of the root-initial vowel. Notice the forms in (25).

- (25) ika-méke *to be lukewarm*
 ik-éχ^w *to jump over* (D) (</ika-o-iχ^w/)
 ik-f:m *to sleep*
 iʔa-pf: *to taste*
 iʔ-ákta *to look at* (</iʔa-o:kta/)
 iʔ-éχ^w *to jump over* (T) (</iʔa-iχ^w/)
 iʔ-ép *to straighten* (</iʔa-ip/)
 iʔ-ép *to carry on head* (</iʔa-i:p/)
 iʔ-án+ *to stir* (</iʔa-o:n+/)

I therefore propose that various morphemes are lexically marked to trigger the following minor rule.

(26) Ablaut: $V \rightarrow \begin{bmatrix} +lo \\ -lng \end{bmatrix} / \text{root} [\text{---}]$

The interaction of Ablaut (26), Coalescence (22), and Vowel Deletion (20) must be discussed. Coalescence bleeds Vowel Deletion in the derivation of forms such as the following, which is the detransitivized emphatic form of /-tis/

(27)	UR	/χo-o-tis/	<i>he pointed!</i>
	Ab1	-----	
	Coal	χ ^w atis	
	V Del	-----	
	SR	χ ^w atis	

Ablaut bleeds Coalescence in derivations such as the following.

(28)	UR	/k-o-oi/	<i>delouse (Subj. Nom.)</i>
	Ab1	k o ai	
	Coal	-----	
	V Del	-----	
	SR	k o ai	

The nonapplication of Vowel Deletion in the derivation of *koai* has not been accounted for and it is not entirely clear how this should be explained. It is obvious from the following forms that some ad hoc device is necessary. The UR of *χenx he yelled!* is /χo-o-inx/ and the UR of *χ^wai he deloused!* is /χo-o-oi/. In *χénx* Coalescence does not apply but Vowel Deletion does. In *χ^wai* Coalescence applies but Vowel Deletion does not. As the derivation of *koái* in (28) illustrates, the prefix -o- never deletes before a stem that underlyingly has a root-initial o. One possible way to handle this problem, suggested to me by G. H. Matthews, is to claim that the boundary between the prefix -o- and the root is deleted when the root begins with o. Another solution, following SPE, is to mark this morpheme [-Vowel Deletion (20)] in this context. I do not see that there is any way to distinguish between these alternatives at present. Therefore I submit them both as rule (29), where # represents the root boundary.

$$(29) \quad \# \rightarrow \emptyset / + o \quad \text{---} \quad \begin{array}{c} V \\ [-1o] \\ [+bac] \end{array}$$

or

$$o \rightarrow [-\text{Vowel Deletion}] / + \quad \text{---} \quad + \quad \begin{array}{c} V \\ [-1o] \\ [+bac] \end{array}$$

Both alternatives predict that any prefix having the shape -o- will pattern similarly. As can be seen by examining the data in section 3.5, this prediction is borne out.

Yet another device is necessary to prevent the application of Coalescence in the derivation of $\chi^{\acute{e}}nx$ *he yelled*. It is not clear how this would be best handled, but I propose for the present that the following rule applies before Coalescence.

$$(30) \quad o \rightarrow \emptyset / + \quad \text{---} \quad + \quad \begin{array}{c} V \\ [-1o] \\ [-bac] \end{array}$$

This rule also predicts that any prefix having the shape -o- will pattern similarly, which can be seen to be true by comparing the data in section 3.5.

The following are complete derivations for the forms under discussion.

(31)	UR	/k-o-oi/	/χo-o-oi/	/χo-o-inx/
	Stress	koóí	χooóí	χoofnx
	Shift	----	-----	-----
	(29)	<i>applies</i>	<i>applies</i>	-----
	(30)	----	-----	χofnx
	Ab1	koáí	χooáí	χoénx
	Coa1	----	χ ^w aáí	-----
	SLV Del	----	-----	-----
	V Del	----	-----	χénx
	SR	koáí	χ ^w aáí	χénx

2.3. 'Irregular' verbs and a concrete solution

There are twenty some verbs that do not pattern like the verbs discussed above.⁷ In this section I will present the forms and simultaneously develop a rule feature solution for them. First note the paradigm given in (32).

(32) <i>be shiny</i>	kkámWx	ttámWx	ssámWx	yoámWx
<i>play stringed instrument</i>	kkénx	itténx	issénx	iyóénx
<i>feel</i>	kkf:	ittf:	issf:	iyóí:
<i>argue</i>	kkó†	ttó†	ssó†	yóó†

The superficial irregularities are numerous. First, if the verbs are assumed to have vowel-initial roots, they appear to be exceptions to Vowel Deletion (20). Compare:

(33) Regular:	/i-yo-i:/	→	iyf:	<i>he heard it</i>
Irregular:	/i-yo-i:/ (?)	→	iyóí:	<i>he felt it</i>

Second, these verbs appear to be exceptions to Stress Shift (13) and so do not undergo Short Low Vowel Deletion (14). Compare:

(34) Regular:	/i-yo-ap/	→	iyó:p	<i>she sewed it</i>
Irregular:	/yo-amWx/ (?)	→	yoámWx	<i>it was shiny</i>

Third, these verbs appear to be exceptions to Coalescence (22). Compare:

(35) Regular:	/yo-otx/	→	yátx	<i>he arose</i>
Irregular:	/yo-o†/ (?)	→	yóó†	<i>he argued</i>

A rule feature analysis could mark these roots as [-Vowel Deletion (20)], [-Stress Shift (13)], and [-Coalescence (22)]. This analysis is not without problems, however, since prefixal *i* deletes in these forms although prefixal *o* does not. Compare the following forms (ignoring the geminate clusters for the moment):

(36) /i-yo-enx/ (?)	→	iyóénx	<i>he played it</i>
/i-sl-enx/ (?)	→	issénx	<i>he will play it</i>
/k-i-enx/ (?)	→	kkénx	<i>he who plays it</i>

A possible escape from this problem would be to posit a minor *i* deletion rule which would apply with these roots only; these roots could therefore still be marked [-Vowel Deletion (20)].

In addition, there is gemination of a prefix consonant if it is contiguous to the root.⁸ Compare:

- (37) Regular: /i-t-i:p/ → itf:p *did he carry it*
 Irregular: /i-t-iʃx/ (?) → ittíʃx *did he grind it*
 Regular: /yo-m-is/ → yomís *it wasn't raw*
 Irregular: /yo-m-amWx/ (?) → yommámWx *it wasn't shiny*

These verbs must be marked to undergo a special gemination rule which does not apply to any other forms in the language.

Yet another rule, which may be independently motivated in the language, is necessary to account for the fact that stress occurs on the stem vowel in yóámWx *it was shiny* but on the prefix vowel in iyóí: *he felt it*. The rule is given as (38).

- (38) Stress Shift II:
$$\begin{matrix} V & + & V \\ 1 & & 2 \\ & \left[\begin{matrix} -lo \\ +str \end{matrix} \right] & \\ & 2 & \end{matrix} \Rightarrow \begin{matrix} [+str] & [-str] \\ 1 & 2 \end{matrix}$$

Some geminating verbs have detransitivized forms.

- (39) *grind to soft* (T) kkíʃx ittíʃx issíʃx iyóíʃx
soft pulp (D) kóíʃx tóíʃx sóíʃx yáíʃx
play stringed (T) kkénx itténx issénx iyoénx
instrument (D) koénx toénx soénx yénx

These verbs appear to be exceptions to Ablaut (26), however. Compare:

- (40) Regular: /t-o-i:p/ → tép *did he carry?* (D)
 Irregular: /t-o-iʃx/ (?) → tóíʃx *did he grind?* (D)
 Regular: /iʔa-i:/ → iʔé *to hear*
 Irregular: /iʔa-i:/ (?) → iʔáí: *to feel*

Note that Coalescence (22) applies in the derivation of yáíʃx *he ground* (D) (</yo-o-iʃx/ (?)) because the structural description is met within the prefixes themselves and a feature [-Coalescence] on the root would not

block the application of that rule, Coalescence also applies in the derivation of the detransitivized forms of *play stringed instrument* but the output is seen only in the emphatic form $\chi^w\acute{e}nx$. To understand why the short low vowel that is the output of Coalescence does not surface in $y\acute{e}nx$ and $\chi^w\acute{e}nx$ ($*ya\acute{e}nx$, $*\chi^w a\acute{e}nx$) it is necessary to see that the vowel sequence ae is not permitted in Seri, nor the sequence $\acute{a}C_0e$ (although $aC_1\acute{e}$ occurs, as in $?\acute{a}-t\acute{e}ms$ *beard (abs.)*). Coalescence (22), as well as a rule that epenthesizes a, therefore sometimes generates an impermissible string which is corrected by the following fronting rule which applies to stressed a's.

(41) Fronting: $\acute{a} \rightarrow [-back] / ____ C_0 e$

Note that Fronting has applied in the pertinent forms that follow.

(42)	-oep χ	<i>flap</i>	k-óep χ	t-óep χ	s-óep χ	yéep χ
	-o: seta	<i>jiggle</i>	k-ó: seta	t-ó: seta	s-ó: seta	yéseta
	-otexa	<i>stagger</i>	k-ótexa	t-ótexa	s-ótexa	yétexa
	-ke:ex	<i>cut hair</i>	(D) k-o-ké:ex	t-o-ké:ex	s-o-ké:ex	ya-ké:ex

Since the present rules would give $*ya\acute{e}nx$ from the supposed underlying form $/yo-o-enx/$ *he played (D)*, we can see that a rule such as the following is necessary and is part of a conspiracy to prevent ae from surfacing.⁹

(43) a Deletion: $a \rightarrow \emptyset / ____ + e$

In the following section I will outline an alternative analysis that will avoid the use of the minus rule features and which will not require any minor rules. It will involve, however, a rule of absolute neutralization.

2.4. Abstract solution

The concrete rule feature analysis outlined above has assumed that the geminating verbs have vowel-initial roots. If that assumption is not granted and consonant-initial roots are posited instead, the analysis would be quite different. If we let the symbol Q represent the initial consonant that these roots may have, it is seen immediately that two rules are necessary. The first is an assimilation rule that accounts for the geminate clusters in forms like $ttám\acute{w}x$ *is it shiny?* from underlying $/t-Qam\acute{w}x/$.

(44) Q Assimilation: $Q \rightarrow C_i / \begin{matrix} C_i \\ [+cns] \end{matrix} ____$

This consonant does not assimilate to a nonconsonantal segment. Note that the glottal stop of the passive prefix $-a?-$ does not geminate.

(45) t-a?-i: *was it felt?*

Another rule, one of absolute neutralization, deletes Q in all other contexts.

(46) Q Deletion: $Q \rightarrow \emptyset$

By ordering these rules after Stress Shift, Vowel Deletion, Coalescence, and Ablaut, none of the pertinent verbs must be marked as exceptions to these rules. Note the following derivations.

(47) UR	/yo-QamWx/	/yo-Qot/	/t-o-Qiʃx/	/yo-o-Qenx/
Stress	yoQámWx	yoQó+	tóQíʃx	yooQénx
Shift	-----	-----	-----	-----
(29)	-----	-----	-----	-----
(30)	-----	-----	-----	-----
Ab1	-----	-----	-----	-----
Coal	-----	-----	-----	-----
SLV Del	-----	-----	-----	-----
V Del	-----	-----	-----	-----
<u>Q</u> Assim	-----	-----	-----	-----
<u>Q</u> Del	yoámWx	yóó+	tóíʃx	yaénx
Shift II	-----	yóo+	tóíʃx	-----
<u>a</u> Del	-----	-----	-----	yénx
SR	yoámWx	yóo+	tóíʃx	yénx

Note that the rules given as Stress Shift II (38) and a Deletion (43) are necessary in this solution also. They were not minor rules, however, and have some independent motivation.

The consonant-initial root also makes the minor i Deletion rule unnecessary since i Deletion (19), which was posited for the regular verbs, deletes prefixal i's before consonants. Thus underlying /si-QamWx/ becomes ssámWx by i Deletion (19) and Q Assimilation.

Now that the abstract solution and the concrete solution have both been outlined, we may proceed to compare them more fully. The concrete solution so far posits vowel-initial roots, a number of minus rule

features, and two minor rules. The abstract solution posits roots beginning with an abstract consonant and two rules affecting this consonant. Since the two analyses make distinct claims about the phonological makeup of these roots, other evidence may be brought to bear on the question of which of these analyses is to be preferred. In the following sections I will present such evidence.

3. Other prefixes

3.1. Causative prefix¹⁰

The causative prefix has several suppletive allomorphs, some of which are morphologically conditioned; in the majority of cases, however, they are determined phonologically. The spell-out rule is given as (48).

- (48) CAUS $\Rightarrow$ a / ___ C
 a / ___ [a class]
 k [+Ablaut] / ___ [k class]
 ak / ___ (+o+) $\begin{matrix} V \\ [+lo] \\ [-lng] \end{matrix}$
 a? / ___ V

Before a consonant the allomorph -a- occurs,

- (49) -pokt *be full* -a-pokt *fill*

This allomorph also occurs with a small set of verbs, all but one of which begin with short a. Since a different allomorph is expected in these cases, a morphological solution appears to be necessary. Therefore these verbs are marked [a class] with respect to the causative prefix, which must be marked [-Vowel Deletion (20)].

- (50) -a?it *eat* -a-a?it *feed; fish*
 -aksχ *be awake* -a-aksχ *awaken (T)*

There is another, fairly small, class of verbs which takes the morphologically determined allomorph -k- with an accompanying ablaut trigger.

- (51) -ašχ *be torn* -k-ašχ *tear*
 -i:tk *drip* -k-etk *cause to drip*
 -i:fš *crackle* -k-efš *cause to crackle*

The allomorph that most commonly occurs before a short low vowel, or before the detransitivizer followed by such a vowel, is -ak-.¹¹

- (52) -anox *burn (I)* -ak-anox
 -o:-mχ *say (D)* (</o-amχ /) -ak-o:-mχ

The allomorph of the causative morpheme that occurs before other vowels is -a?-.

- (53) -a:s *dissolve (I)* -a?-a:s
 -oi+ *be blue/green* -a?-oi+
 -eši *beat (D)* (</o-iši /) -a?-eši-t

The abstract analysis predicts that the allomorph that will occur with the Q-initial stems is the allomorph which occurs with consonant-initial stems, namely -a-. Such is the case, without exception.

- (54) -a-i?Wx (</a-Qi?Wx /) *make red*

The rule feature analysis would have to mark these verbs as belonging to the [a class] set of verbs. Since such a class already exists (although otherwise limited basically to roots beginning with short low vowels), this recourse is not very costly in terms of extra lexical features. Therefore the abstract analysis has no clear advantage over the rule feature analysis with respect to this prefix.

3.3. Passive prefix

The passive morpheme has two suppletive allomorphs whose distribution is basically determined by the phonological shape of what follows it. The spell-out rule is given below.

- (55) PASSIVE $\Rightarrow$ p [+Ablaut] / ____ root [V
 a? / ____

The allomorph of the passive morpheme is -p- plus an ablaut trigger when it is followed by a vowel-initial root.

- (56) t-p-áp *was the basket sewn?* (</t-p-ap /)
 t-p-éši *was he beat?* (</t-p-iši /)
 t-p-ákta *was it looked at?* (</t-p-o:kta /)
 ?a-p-á:fk *what was pounded*
 ?a-p-ási *what was drunk*

ʔa-p-ép	<i>what was straightened</i>	(</ʔa-p-ip/)
ʔa-p-ép	<i>what was carried on head</i>	(</ʔa-p-i;p/)
ʔa-p-án+	<i>what was stirred</i>	(</ʔa-p-o:n+/)

The allomorph that occurs elsewhere is -aʔ-. In (58a) it occurs before a consonant-initial root, and in (58b-d) before the causative prefix. The a of the causative prefix deletes in some cases by the following independently motivated rule.

- (57) a Deletion: $a \rightarrow \emptyset / a \ C + \text{---} \left(\begin{array}{c} C \\ [+cns] \end{array} \right) +$
- (58) a, t-aʔ-kášni *was he bitten?*
- b, t-aʔ-aʔ-ítax *was it made to burn?*
- c, t-aʔ-k-ó:-šix-ot *was he helped to cut?* (</t-aʔ-ak-o-ašix-ot/
(INTER-PASS-CA-DETR-cut-SUFF)
- d, t-aʔ-ípot *was he paid?* (</t-aʔ-a-ipot/
(INTER-PASS-CA-exchange)

The glottal stop of the passive prefix deletes by the following rule, which is fed by a Deletion (57). Some examples are given in (60).

- (59) ʔ Deletion: $ʔ \rightarrow \emptyset / ʔ + V \text{---} + C$
- (60) ʔ-a-sánx *who was carried* (</ʔa-aʔ-sánx/)
(NOM-PASS-carry)
- ʔ-a-k-átax *who was caused to go* (</ʔa-aʔ-ak-atax/)
(NOM-PASS-CA-go)
- ʔi-ʔ-a-kášni *my being bitten* (</ʔi-ʔ-aʔ-kašni/)
(1POSS-NOM-PASS-bite)

The abstract analysis predicts that Q-initial verbs will not take the allomorph -p-, whereas the concrete analysis makes no such prediction. The following forms are therefore supportive evidence for the abstract analysis.

- (61) kw-t-aʔ-áχš *was he hit?*
- t-aʔ-í: *was it felt?*
- ʔ-á-otš *what was sucked* (</ʔa-aʔ-Qotš/)
- ʔ-énx *what was played* (</ʔa-aʔ-Qenx/)
- ʔ-á-aχš *what was hit* (</ʔa-aʔ-Qaχš/)

The rule feature analysis must mark these verbs as [a? class] and also include an ad hoc minor rule to delete the glottal stop of the passive morpheme when the latter is preceded by a glottal stop.

(62) ? Deletion (minor): ? → ∅ / ? + V ___ +

3.3. Imperative prefix

The second person imperative morpheme has a number of suppletive allomorphs. The spell-out rule (with ordered clauses) is given as (63) and explained below.

(63) 2 PERSON IMPERATIVE ⇒

∅ / 1 SG OBJ ___

k / ___ NEG

∅ / 3 REF ___ root[[]₊^V_{lo}
-lng]

k / ___ root[[]₊^V_{lo}
-lng]

∅ [+Ablaut] / ___ ^V_{_[+lo]
[+bac]}

and the form is intransitive

? / ___

The imperative prefix is -∅- when it is preceded by the first person singular object prefix (which has a special allomorph before imperatives).

(64) i?po-∅-sánx *Carry me on your back!*

i?p-∅-ó:kta *Look at me!*

i?po-∅-m-ó:kta *Don't look at me!*

i?p ó:-št *Tattoo me!* (/?po-∅-ašt/)

The imperative prefix is -k- when it is followed by the negative morpheme (and not preceded by the first person singular object prefix).

(65) k-m-átax *Don't go!*

k-m-o-tís *Don't point! (D)*

k-am-tís *Don't point at it!*

The o in *kamtis* is epenthetic. The rule, which bleeds i Epenthesis (3), is given as (66).

$$(66) \text{ } \underline{o} \text{ Epenthesis: } \emptyset \rightarrow o / \left[\begin{array}{c} \text{C} \\ +\text{cns} \\ -\text{lab} \end{array} \right] \text{ — } \left[\begin{array}{c} \text{C} \\ +\text{nas} \end{array} \right] \text{ } \text{C}$$

The imperative prefix is $-\emptyset-$ when it is preceded by third person referent clitic and followed by a short low root vowel,

- (67) *kó:- $\emptyset$ -ka* *Mix it in with it!*
sá:řa ki? kó:- $\emptyset$ -mxk *Take it to Sarah!* ($</k\ o\ \emptyset\text{-amxk}/$)
?ó?řa kó:- $\emptyset$ -taχ *Go like a donkey!* ($</k\ o\ \emptyset\text{-ataχ}/$)

The imperative prefix is $-k-$ when it is otherwise followed by a short low root vowel.

- (68) *k-átaχ* *Go!*
k-ámxx *Bring it!*
k-émen *Winnow it!*
?e k-áškam *Come (pl.) to me!*

The imperative prefix is $-\emptyset-$ with an ablaut trigger when it precedes any vowel other than a high front vowel if the form is intransitive.¹²

- (69) *áit* *Dance!* ($</\emptyset\text{-oit}/$)
ás *Sing!* ($</\emptyset\text{-o:s}/$)
énx *Shout! (D)* ($</\emptyset\text{-o-inx}/$)
asánx *Carry on your back! (D)* ($</\emptyset\text{-o-sanx}/$)
éepχ *Flap!* ($</\emptyset\text{-oepχ}/$)
éřexa *Stagger!* ($</\emptyset\text{-otexa}/$)
á:npχ *Go home!* ($</\emptyset\text{-a:npχ}/$)
á:skim *Paddle!* ($</\emptyset\text{-a:skim}/$)

The imperative prefix is $-\text{?}-$ elsewhere.

- (70) ʔ-f:m *Sleep!*
 ʔ-ó:kta *Look at it!*
 ʔ-á:fk *Pound it!*
 iʔ-mái *Be quiet!*
 iʔ-ká: *Look for it!*
 iʔ-ʔé:tim *Lope!*

It is not surprising for either analysis that the geminating verbs behave like other verbs in cases where the first person singular object occurs, in negative imperatives, or when detransitivized.

- (71) iʔpó-Ø-im *Throw it at me!* /ʔpo-Ø-Qim/
 k-om-mótx *Don't argue (pl.)!* /k-m-Qotx/
 énx *Play! (D)* /Ø-o-Qenx/

Crucially, however, the abstract analysis predicts that Q-initial roots will take the allomorph -ʔ- in other cases, never -k- or -Ø-. One would also expect that i Epenthesis (3) might apply before Q Deletion. Note that these expectations are fulfilled in the following data.

- (72) iʔ-íšo *Lift it!* /ʔ-Qišo/
 iʔ-ámwx *Be shiny!* /ʔ-Qamwx/
 iʔ-ótš *Suck it!* /ʔ-Qotš/
 iʔ-énx *Play it!* /ʔ-Qenx/

The rule feature analysis does not make these predictions and hence certain of these verbs would have to be marked [Q class] for imperatives in these situations. More troublesome is the i Epenthesis rule which applies totally without phonological motivation in the rule feature analysis. (The forms in (72) contrast with imperatives of Q-initial stems, such as iʔʔé:tim *Lope!*. A completely ad hoc minor epenthesis rule, or at least an ad hoc addition to the existing epenthesis rule, is necessary. It might appear as (73).

- (73) i Epenthesis (minor): Ø → i / $\left. \begin{array}{c} \parallel \\ \text{C} \end{array} \right\} __ ? +$

3.4. Action nominalizer

The verb of a complement clause is nominalized if its subject is not coreferential to the subject of the matrix clause, as in the following sentence.

- (74) sá:ʔa kiʔ ʃiʔ ʃo kʷ-mi-ʔ-á-aʔit iʔ-mʃ:-mʃo
 Sarah the thing a 3REF-2POSS-NOM-CA-eat 1SUB-PNF-want

I want you to feed Sarah something.

This nominalizer has three suppletive allomorphs whose distribution is shown by the following spell-out rule (with ordered clauses).

- (75) ACTION NOM $\Rightarrow \emptyset$ / $\left\{ \begin{array}{l} \text{root} \left[\begin{array}{c} V \\ [+lo] \\ [-lng] \end{array} \right] \\ c \end{array} \right.$
 $\text{ʔ} / \text{--- PASS}$
 $y [+Ablaut] / \text{---} \left\{ \begin{array}{c} V \\ [+lo] \\ [+bac] \end{array} \right\}$ and the form is intransitive
 $\text{ʔ} / \text{---}$

The action nominalizer is $-\emptyset-$ when a consonant or a root-initial short low vowel follows it.

- (76) ʔi- $\emptyset$ -kó:ʔa *my babysitting him*
 ʔi- $\emptyset$ -m-áʃiʔ *my not cutting it*
 ʔi- $\emptyset$ -m-ótʔ *my not arising*
 ʔí- $\emptyset$ -ʃiʔ *my cutting it* (</ʔi- $\emptyset$ -aʃiʔ/)
 ʔí- $\emptyset$ -men *my winnowing it* (</ʔi- $\emptyset$ -emen/)
 ʔi- $\emptyset$ -p-étʔa *my being poked* (</ʔi- $\emptyset$ -p-itʔa/)

The action nominalizer is $-\text{ʔ}-$ before the other allomorph of the passive morpheme.

- (77) ʔi-ʔ-a-kaʃni *my being bitten* (</ʔi-ʔ-aʔ-kaʃni/)

The allomorph $-y-$ with an ablaut trigger occurs when the following morpheme begins with a low vowel or a back vowel and the form is intransitive. The i of the possessive prefix deletes before y and i Epenthesis (3) applies.

- (78) iʔ-y-átʔ *my arising* (</ʔi-y-otʔ/)
 im-y-á-ʃiʔ *your cutting (D)* (</mi-y-o-aʃiʔ/)
 y-a:ʔʃiʔ *his sneezing* (</i-y-a:ʔʃiʔ/)

The action nominalizer is -ʔ- elsewhere.

- (79) ʔi-ʔ-ʔp *my straightening it*
 ʔi-ʔ-ʔ:p *my carrying it on my head*
 ʔi-ʔ-ó:ktá *my looking at it*
 ʔi-ʔ-á:fk *my pounding it*
 ʔi-ʔ-ʔ:m *my sleeping*

The abstract analysis predicts that Q-initial verbs will take the -Ø- allomorph, but the rule feature analysis does not make this prediction. Note that the following data confirm the abstract analysis once again.

- (80) mi-Ø-ótš *your sucking it*
 mʔ-Ø-išo *your lifting it*
 mi-Ø-ó+χ *your arguing (pl.)*

(Note that Stress Shift II (38) must be revised slightly since the stress does not shift to the prefix vowel when the prefix vowel is i and the stressed vowel is o.)

In the rule feature analysis the geminating verbs must be specially marked to take the -Ø- allomorph.

3.5. Object nominalizer

If the object of the verb of a relative clause is coreferential with the head noun, the verb is nominalized and the subject person is indicated by a possessive prefix. Two examples are given in (81).

- (81) a. ktám m-ó:-št kiʔ Ø-yó:-fp
 man 2POSS-OBJNOM-tattoo the 3SUB-PAST-arrive
 The man whom you tattooed arrived.
- b. mó:sni ʔ-Ø-ʔtta kiʔ k-óxoš-iʔa
 turtle 1POSS-OBJNOM-poke the NOM-flee-DECL
 The turtle that I poked at fled.

The suppletive allomorphs of the object nominalizer are distributed as shown in (82).

- (82) OBJECT NOM $\Rightarrow$ $\emptyset$ / ____ NEG
 ? / ____ i +
 $\emptyset$ / ____ ^V
 $\begin{bmatrix} -lo \\ -bac \end{bmatrix}$
 y / ____ CAUS
 o [+Ablaut] / ____

The allomorph which occurs before the negative morpheme is - $\emptyset$ -.

- (83) mi- $\emptyset$ -m-émen *what you didn't winnow*
 i- $\emptyset$ -m-ámšo *what he didn't want*
 mi- $\emptyset$ -m-képe *what you didn't like*
 mi- $\emptyset$ -m-ó:kta *what you didn't look at*

The allomorph -?- occurs before a prefixal i, such as the derivational prefix -i- which derives verbs from nouns.

- (84) mi-?-i-?áχw+ *what you had (as eating utensil)*

Before other high front vowels a zero allomorph occurs.

- (85) ?- $\emptyset$ -f_p *what I straightened*
 ?- $\emptyset$ -f_{i:p} *what I carried on my head*

Before the causative prefix the allomorph -y- occurs.

- (86) i?-y-a-sf_i:met *what I baked (bread)*
 i?-y-a?-f_iχpχax *what I made quiver*
 im-y-á-a?it-im *whom you fed*
 Im-y-ak-ó:-š_iχ-ot *whom you helped to cut*

Elsewhere the allomorph -o- with an ablaut trigger occurs.

- (87) ?-ó:-f_{mox} *what I gathered (firewood) (</?i-o-afmox/)*
 ?-o-kése_{xk} *what I gnawed*
 ó:-mšo *what he wanted (</i-o-amšo/)*

Rule (90) devoices and spirantizes an unstressed o when it follows k and precedes a vowel, a single consonant followed by a vowel, or a consonant cluster whose first member is an oral, nonback consonantal segment. The following forms illustrate the operation of this rule.

- (91) *kw-s-pánšχ* *he is running like him*
 kw-t-pánšχ *did he run like him?*
 kw-yo-pánšχ *he ran like him*
 kw-?-á:s *Give it to him to drink!*
 kw-k-á:s *he who gives it to him to drink*
 an kw-áiškt *Come in (pl.)! (</ko-Ø-oiškt/)*

This rule precedes o Epenthesis (66) since it is not blocked by that rule. Note the form *kokompánšχ* *Don't run like him!* in (89).

The abstract solution predicts that the abstract consonant could block rule (90) by being the second consonant of a cluster. The concrete analysis does not make this prediction. The existence of forms such as the following are therefore evidence in favor of the abstract analysis.

- (92) *ko-?-áχš* *Hit him with it!* (</ko-?-Qaχš/)
 ko-?-íšx *Pound it with it!* (</ko-?-Qišx/)

In the rule feature solution these roots must be marked [-o Spirantization (90)],

4. Comparison and conclusions

I have presented in detail how two different analyses would handle these data. There are certain rules, such as a Deletion (43), that these analyses share even though they posit different underlying representations for the geminating verbs. In addition, the abstract analysis requires two rules, one of which is a rule of absolute neutralization, and the abstract consonant. In the rule feature solution the geminating verbs must be marked in the following ways.

(93) Minus rule features

1. [-Vowel Deletion (20)]
2. [-Ablaut (26)]
3. [-Stress Shift (13)]

4. [-Coalescence (22)]
5. [-o Deletion (30)]
6. [-o Spirantization (90)]

Minor rules

7. [+Gemination]
8. [+i Deletion]
9. [+i Epenthesis (73)]
10. [+ʔ Deletion (62)]

Allomorphy class markings

11. [a/∅ class causative]
12. [aʔ class passive]
13. [ʔ class imperative]
14. [∅ class action nominalizer]
15. [o class object nominalizer]

The number of such features in the concrete analysis is significant, and increased proportionately to the number of prefixes considered. The concrete counterparts to abstract analyses proposed for other languages have required at most six of this type of feature.

It is also significant that there is no generalization possible within the rule feature analysis in which each feature is unrelated functionally. Formally of course one could relate them by some lexical cover feature such as [+irregular]. One undesirable characteristic of the latter is that all of the Q-initial verbs would be marked with all of the irregular features by this cover feature even though for some verbs a certain feature is actually irrelevant.

Faced with these alternative solutions there are reasons why the abstract one should be favored. First, in some sense it is simpler, and although the evaluation metric based on simplicity has been called into question, especially in cases involving absolute neutralization (see Kiparsky (1973b:66)), this fact cannot be considered irrelevant. Second, as Sanford Schane has pointed out to me, a generalization is made concerning these verbs in the abstract analysis that is analogous to what a speaker might do. By numerous clues the speaker realizes that these verbs act as if they had consonant-initial roots, even though there is no phonetic realization of this consonant following a nonconsonantal segment.

This generalization is strengthened by the geminate clusters which occur. Although the data may not require the speaker to adopt the analog of the abstract analysis, the sheer simplicity of such a solution at least makes this possible. Since the features in the concrete solution are unrelated, evidence that a speaker has internalized such a solution might be found in the loss of one or some of these ad hoc markings. Alternatively, in the rule feature analysis there is no reason why the set of exception features might not be expanded by a speaker's adding another historically unrelated but equally ad hoc exception feature. I have not observed any facts that support the concrete analysis in either way.¹³

The evidence for the abstract solution is multiple. Nevertheless, Brame 1972:51 suggests that similar arguments for an abstract solution in Maltese Arabic would be convincing 'only if the exact nature of X can be discovered and if X can be shown to exhibit a distribution similar to other root segments.' Although Brame could do both for Arabic, I have found no evidence for positing the abstract consonant of Seri in any position but root-initial position. As for the matter of identifying the abstract consonant, the problem in Seri is that there is no phonetic evidence for claiming Q to be any certain segment, unlike the Arabic or Yawelmani cases. Nor do the facts point to what class of consonant it might belong, unlike the French case. As far as there being a gap in the phonemic system,

(94)	p	t		k		k ^w	?
	f	s	ʃ	x	χ	χ ^w	W
			+				
	m	n					
			y				

it is only somewhat suggestive that there is no bilabial semivowel. One might just as easily note the absence of a uvular stop or h¹⁴. Therefore there seems to be no way to identify this abstract consonant with chameleon-like properties. This problem has consequences for the framework in which it arose. Unless we specify the feature values as being plus or minus, there would be what has been viewed as an improper three-way contrast between plus, minus, and zero (Stanley 1967). Underlying forms with a contrasting but unspecified consonant also clearly violate Postal's Naturalness Condition (Postal 1968), one ramification of which would require that the feature matrices of underlying segments represent real segments. An alternative which at one time would have been considered necessary and even desirable would have been to posit a distinct but arbitrary underlying segment to contrast with other underlying segments. Although this solution would certainly not be looked upon with a great deal of sympathy today, the alternative of abandoning principles that have at least been implicitly followed in generative phonology for more

than a decade is not immediately attractive either. Although I do not strongly favor one of these alternatives over the other, I am more inclined to think that it is the conditions that must be relaxed; that is, it is our notions of the abstractness of language that must be broadened.

FOOTNOTES

¹ I wish to thank Barbara Hollenbach, Margaret Langdon, G. H. Matthews, Mary B. Moser, and Sanford Schane for their helpful criticisms. I am especially indebted to Mary Moser for her constant help and for giving me access to the fieldnotes collected by both herself and her late husband, Edward W. Moser, over a period of more than twenty-five years under the auspices of the Summer Institute of Linguistics. This paper is based on these fieldnotes, Moser 1970, Moser 1976, and my own fieldnotes. I also appreciate the help of Roberto Herrera Marcos and Sergio Mendez of Desemboque, Sonora, in confirming and expanding these data. This paper is a revision of an earlier analysis of Seri verb morphophonemics (Marlett 1976) which was based on a more limited set of data. This discussion of the abstract consonant is a greatly expanded version of a section of Marlett 1978.

² The term 'final' is used according to its usage in Relational Grammar (Perlmutter and Postal (in press)).

Most of the phonetic symbols used below have their normal values. Those that are exceptional or less standard are the following: e = [æ]; e: = [æ:]; χ is a back velar/uvular fricative. The (taxonomic) phonemes of Seri are: p, t, k, kʷ, f [ɸ], s, ʃ (alveopalatal retroflex), x, χ, χʷ, w, m, n, ɬ, y, ʔ; i, i:, e, e:, o, o:, a, a:. (Although the rounded consonants contrast taxonomically, most occurrences are derived from sequences of a back consonant and o.) ʔ occurs in loanwords only. My analysis differs slightly from Moser and Moser 1965.

The effects of certain low level rules such as nasal assimilation have not been included. Forms given in slashes are (near) underlying forms; those given without bracketing of any kind are near surface forms.

The following abbreviations are used: abs = absolutive; CAUS = causative; D = detransitivized; DECL = declarative; I = intransitive; interr = interrogative; intr = intransitive; NEG = negative; nom = nominalized; NOM = nominalizer; OBJNOM = object nominalizer; pl = plural; POSS = possessive; PNF = proximate nonfuture; REF = referent; sg = singular; SR = surface representation; sub = subject; SUFF = suffix; T = transitive; UR = underlying representation.

³ Glottal stop is considered a nonobstruent. The rule is given in a somewhat simplified form.

⁴ The rules for the occurrences of certain prefixes are given more precisely in Marlett 1979.

⁵ The emphatic prefix $\chi\text{-}$ and the dependent future prefix po- pattern like the past tense prefix yo- . The proximate nonfuture prefix mi- patterns like the (independent) future prefix si- . Although future forms are generally followed by one of several clitics, they are cited here without them.

⁶ Since the number/aspect marking also involves modification of the root itself, what are given as underlying forms of verb roots are actually intermediate forms.

⁷ There is, of course, an occasional verb that is exceptional to one or another of the rules given above. The verbs discussed below, however, are superficially much more exceptional and in different ways. The verbs that I have found to pattern as I will describe below are the following (cited with the symbol Q representing the abstract consonant which I will introduce below).

Intransitive

$-\text{Qi:mi}\chi$	<i>be very much</i>
$-\text{Qi?W}\chi$	<i>be red</i>
$-\text{Qa}\text{šax}\alpha$	<i>be latticed</i>
$-\text{Qap}\chi^w+$	<i>be brittle</i>
$-\text{QamW}\chi$	<i>be brilliant</i>
$-\text{Qa?}$	<i>make (whistling) sound</i>
$-\text{Q}\alpha$	<i>argue</i>
$-\text{Qa}\chi$	<i>be hard</i>
$-\text{Qo:}\text{sx}$	<i>sprinkle</i>
$-\text{Qamop}\chi\alpha$	<i>get lost</i>

Transitive

$-\text{Qim}$	<i>throw at</i>
$-\text{Ql:}$	<i>feel</i>
$-\text{Q}\alpha\text{š}$	<i>suck</i>
$-\text{Qa}\chi\text{š}$	<i>hit with stick</i>
$-\text{Qi}\text{šo}$	<i>lift (heavy item)</i>
$-\text{Qaktim}$	<i>use, fix, touch</i>

Transitive and Detransitivized

$-\text{Qe:tnl}$	<i>tap</i>
$-\text{Qlmo}\text{š}$	<i>think</i>
$-\text{Qi}\text{šx}$	<i>grind to pulp</i>
$-\text{Qenx}$	<i>play stringed instrument</i>

⁸ These phonetically long consonants must be interpreted phonologically as geminates and not long consonants since they provide the necessary conditions for a rule that epenthesis ə (see (65), (66), and (71) below).

⁹ The *a* does not simply assimilate since *he played* (D) is homophonous with *yénx he yelled* (D) (</yo-o-inx/) (see (25)).

¹⁰ This prefix is used in constructions other than as a causative prefix and so this label is used only informally.

¹¹ This allomorph also unexplainedly occurs in -ak-o:kta *show* (-CA-look at).

¹² This spell-out rule provides an argument for positing the presence of the detransitivizer -o- in the UR of *énx Shout!* (D) (see (69)), even though it is deleted by the (ad hoc) rule (30). The spell-out rule would have to be complicated considerably if it were instead claimed that the detransitivizer simply has a zero allomorph (with an ablaut trigger) before such roots.

¹³ There is one set of related data that I am unable to explain at present. The following verbs share the semantic base meaning of *think* but each is used in a specific, restricted context: -imoš (I) (pl., -imWk); -amoš (I) (pl., -amWk); -qimoš (T) (pl., -qimWk); -o-imoš (I) (</-o-qimoš/) (pl., -o-imWk). Also compare *heart*: -amoš (pl., -amWk).

¹⁴ Some diachronic evidence exists supporting the notion that the abstract consonant was a voiced bilabial approximant. Roberto Herrera Marcos, age 61, has reported that *k-kí?Wx be red* used to be pronounced [kwí?Wx], *t-tí?Wx* pronounced [twí?Wx], and so on. Interestingly enough, each of the vocabulary lists made in the last half of the nineteenth century, such as Pinart 1902, includes words transcribed with b's and/or v's. (Pinart's list was made in 1879.) Present-day *sea teddybear choŋla* was recorded as *sivva*, for example. (Older speakers are not able to verify any of these pronunciations.) It is also significant that Spanish *kabayo horse* has become *ká:y* in Seri. This word was recorded by Pinart as *kavai*.

REFERENCES

- Brame, Michael. 1972. "On the Abstractness of Phonology: Maltese ʔ ," in M. K. Brame, ed., Contributions to Generative Phonology, University of Texas Press, Austin.
- Fujimura, O., ed. 1973. Three Dimensions of Linguistic Theory, TEC, Tokyo.
- Hyman, Larry M. 1970. "How Concrete is Phonology?," Language 46, 58-76.
- Kiparsky, Paul. 1973a. "How Abstract is Phonology?," in Fujimura 1973.
- Kiparsky, Paul. 1973b. "Abstractness, Opacity, and Global Rules," in Fujimura 1973.
- Kisseberth, Charles W. 1969. "On the Abstractness of Phonology: the Evidence from Yawelmani," Papers in Linguistics 1, 248-82.
- Kuroda, S.-Y. 1967. Yawelmani Phonology. MIT Press, Cambridge, Mass.
- Marlett, Stephen. 1976. "A Sketch of Seri Verb Morphophonemics," 1976 Workpapers of the Summer Institute of Linguistics, University of North Dakota, 20:39-66.
- . 1978. "Aspects of Seri Phonology," 1978 Workpapers of the Summer Institute of Linguistics, University of North Dakota, 22:114-46.
- . 1979. "Personal and Impersonal Passives in Seri," this volume.
- Moser, Edward W. 1970. "Some Seri Morphophonemic Data." ms.
- . 1976. "Seri Verb Root Classes." ms.
- Moser, Edward W. and Mary B. Moser. 1965. "Consonant Vowel Balance in Seri (Hokan) Syllables," Linguistics 16:50-67.
- . Unpublished fieldnotes.
- Perlmutter, D. and P. Postal. (in press) Studies in Relational Grammar 1.
- Pinart, A. 1902. "Vocabulario Pinart," in F. Hernandez, ed., Las razas indigenas de Sonora y la Guerra del Yaqui, J. de Elizade, Mexico.
- Postal, Paul. 1968. Aspects of Phonological Theory, Harper and Row, NY.
- Schane, Sanford A. 1968. French Phonology and Morphology, MIT Press, Cambridge, Mass.

- Selkirk, Elisabeth and Jean-Roger Vergnaud. 1973. "How Abstract is French Phonology?", Foundations of Language 10: 249-254.
- Stanley, Richard, 1967. "Redundancy Rules in Phonology," Language 43:393-436.
- Vago, Robert M. 1973. "Abstract Vowel Harmony Systems in Uralic and Altaic Languages," Language 49:579-605.