The Abstract Consonant in Seri
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Proceedings of the Seventh Annual Meeting of the Berkeley Linguistics Society (1981), pp. 154-165

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0. Introduction

An important issue within phonological theory has been, and continues to be, the question of abstractness. In this paper a case is presented for positing an abstract consonant in Seri, a Hokan language of northwestern Mexico. It will be shown that the motivation for this analysis is multiple and that by standard criteria such a solution is preferable to a concrete analysis. The identity of the consonant cannot be determined, however. This fact makes the abstract analysis for Seri especially significant as it means that various proposed constraints on underlying forms cannot be maintained. The significance of these facts for nontransformational frameworks will also be discussed.

1. Regular verbs

The forms in (1), cited with third person singular subject and object (where applicable), illustrate the four groups into which the verbs often divide themselves. The grammar of Seri repeatedly pays strict attention to the root-initial segment. Therefore there is no question whatsoever what the URs of the morphemes are, in spite of the complicated allomorphy. The verb forms in (1) are representative of the language; other inflectional prefixes which pattern similarly to those in (1) could be cited (see Marlett 1981).[1,2]

(1)	Root	Neutral /t-/	Irrealis /si-/	Distal /yo-/	Infinitive
a. Short low vowel					
'sew (basket)'	-ap	i-t-áp	i-sí:-p	i-yó:-p	i?á-p
'used up'	-eme	t-éme	sí:-me	yó:-me	iké-me
b. Consonant					
'look for'	-ka:	i-t-ká:	i-s-ká:	i-yo-ká:	i?a-ká:
c. Round vowel, intransitive					
'arise'	-otx	t-ótx	s-ótx	yátx	ik-ótx
d. Other vowel					
'stir'	-o:nɬ	i-t-ó:nɬ	i-s-ó:nɬ	i-y-ó:nɬ	i?-ánɬ
'raw'	-is	t-ís	s-ís	y-ís	ik-ís
'pound'	-a:fk	i-t-á:fk	i-s-á:fk	i-y-á:fk	i?-á:fk
'hear'	-i:	i-t-í:	i-s-í:	i-y-í:	i?-é

The rules needed to account for the allomorphy in (1) are given below. First, Short Low Vowel Deletion (2), illustrated by most of the forms in (1a), deletes a stressed low vowel when it follows a prefix vowel, the latter lengthening (and sometimes harmonizing) under certain conditions.[3]

(2) Short Low Vowel Deletion: $V_1 + \begin{bmatrix} +lo \\ -lng \\ +str \end{bmatrix}_2 \Rightarrow [+str]_1 \ \emptyset_2$

Second, Coalescence (3) merges two o's into a single short a if the clause is superficially intransitive, as in the distal form of 'arise'.

(3) Coalescence: $\underset{[+rd]}{V_1} + \underset{[+rd]}{V_2} \Rightarrow \emptyset_1 \begin{bmatrix} +lo \\ -lng \end{bmatrix}_2$

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 /-o-/, which immediately precedes the root. Consonant-initial and short low vowel-initial roots are illustrated by the forms in (4).

(4)					
'point at'	(T)	i-t-tís	i-s-tís	i-yo-tís	i?a-tís
	(D)	t-o-tís	s-o-tís	ya-tís	ik-o-tís
'swallow'	(T)	i-t-ám	i-sí:-m	i-yó:-m	i?á-m
	(D)	t-ó:-m	s-ó:-m	yá-m	ik-ó:-m

Note that Coalescence (3) has applied in the derivation of the forms yatís 'he pointed' and yám 'he swallowed' from underlying /yo-o-tis/ and /yo-o-am/.

Third, Vowel Deletion (5) applies elsewhere when two vowels are juxtaposed, as in most of the forms of (1d).

(5) Vowel Deletion: $V \rightarrow \emptyset \ / \ \_\_\_ + V$

Fourth, i-Deletion (6) results in the vowel of the irrealis prefix (and of other prefixes) being lost before a consonant.

(6) i-Deletion: $i \rightarrow \emptyset \ / \ C \ \_\_\_ + C$

Finally, the 'transitive' allomorph of the infinitive prefix carries an ablaut trigger which lowers and shortens a morpheme-initial high vowel. The rule is given as (7).

(7) Ablaut (morphologically triggered): $\underset{[-lo]}{V} \rightarrow \begin{bmatrix} +lo \\ -lng \end{bmatrix} \ / \ + \ \_\_\_$

The detransitivizer /-o-/ also carries an ablaut trigger, as shown by the forms in (8). Ablaut (7) bleeds Coalescence (3).

(8)								
'defeat'	(T)	i-t-íši	i-y-íši	'delouse'	(T)	i-t-ói	i-y-ói
/-iši/	(D)	t-éši	y-éši	/-oi/	(D)	t-o-ái	yá-ai

Vowel Deletion (5) unexpectedly does not apply in the derivation of forms such as toái 'he deloused' from underlying /t-o-oi/. The morpheme /-o-/ must be marked [-Vowel Deletion (5)] under certain conditions. Coalescence (3) also unexpectedly does not apply in the derivation of forms such as yéši 'he defeated' from underlying /yo-o-iši/. A rule deleting the morpheme /-o-/ under certain conditions before the application of Coalescence would give the correct results. (See Marlett 1981 for more details.)

2. 'Irregular' verbs and a concrete solution

There are twenty-some verbs that do not pattern like the verbs discussed above.[4] Their behavior is illustrated by the forms in (9). Their aberrant characteristics will be explained by developing a concrete rule-feature solution which is presented in (10).

(9)	'hard'		ttáX	ssáX	yoáX	ikáaX
	'red'		ttí?Wx	ssí?Wx	yói?Wx	ikái?Wx
	'argue'		ttół	ssół	yóoł	ikáoł
	'suck'		ittótš	issótš	iyóotš	i?áotš
	'feel'		ittí:	issí:	iyói:	i?ái:
	'grind'	(T)	ittíšx	issíšx	iyóišx	i?áišx
		(D)	tóišx	sóišx	yáišx	ikóišx

If these verbs are assumed to have vowel-initial roots, they appear to be exceptions to Short Low Vowel Deletion (2), Coalescence (3), Vowel Deletion (5), and Ablaut (7). They also behave differently with respect to the complication involving the deletion of the detransitivizer /-o-/ which was discussed at the end of §1. A minor rule would be necessary to delete the vowel of the prefix /si-/ before these roots. Finally, a minor rule is needed to account for the gemination which is a notable characteristic of these verbs.[5]

(10)	[-SLV Deletion]	Regular:	/i-yo-ap/	→	iyo:p	'sew'
		Irregular:	/yo-aX/ (?)	→	yoaX	'hard'
	[-Coalescence]	Regular:	/yo-otx/	→	yatx	'arise'
		Irregular:	/yo-oł/ (?)	→	yoół	'argue'
	[-Vowel Deletion]	Regular:	/i-yo-i:/	→	iyi:	'hear'
		Irregular:	/i-yo-i:/ (?)	→	iyoi:	'feel'
	[-Ablaut]	Regular:	/i?a-i:/	→	i?e	'hear'
		Irregular:	/i?a-i:/ (?)	→	i?ai:	'feel'
	re: /-o-/	Regular:	/yo-o-iši/	→	yeši	'defeat'
		Irregular:	/yo-o-išx/ (?)	→	yaišx	'grind'
	Minor i-Deletion	/si-aX/ (?) → ssaX 'hard'				
	Minor rule needed to account for gemination					

3. An abstract solution

The concrete rule-feature solution 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. First of all, the fact that

the behavior of these verbs is not like that of other vowel-initial roots is immediately explained. Second, the geminate consonant clusters can be handled by a phonological rather than morphological rule. With the symbol Q representing the initial consonant of these roots, the following assimilation rule derives ttáX from underlying /t-QaX/.

(11) Q-Assimilation: $Q \rightarrow C_i \; / \; C_i \; [+cns] \; \_\_$

(Q does not assimilate to a glottal stop, as will be seen below.) Third, the consonant-initial root also makes the minor i-Deletion rule unnecessary since i-Deletion (6) deletes prefixal i's before consonants. Thus underlying /si-QaX/ becomes ssáX by i-Deletion (6) and Q-Assimilation. The only extra rule necessary, a rule of absolute neutralization, deletes Q in all other contexts.

(12) Q-Deletion: $Q \rightarrow \emptyset$

By ordering rule (12) appropriately, all of the supposed exceptional behavior of these verbs disappears.

Since the concrete analysis and the abstract analysis make different 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.

4. Additional evidence

Many of the prefixes in Seri display a considerable amount of suppletive allomorphy. While some is conditioned completely by syntactic or semantic factors (such as the infinitive prefix), and hence is not of interest here, much of it is conditioned by the phonological shape of the following morpheme. (Even when the suppletive allomorphs are phonologically similar, and especially when they are not, it would not be possible to derive the surface forms from one underlying form without positing totally ad hoc, morpheme-particular rules.) The arguments presented in §§4.1-5 are all of the following form: before consonant-initial stems allomorph X is expected; allomorphs Y and Z occur in other environments; in every case the abstract analysis makes the correct prediction as to which allomorph will occur with geminating verbs. A rule-feature analysis, on the other hand, does not make these predictions and must be complicated to account for each case. It is believed that this is the first time such evidence has been used in the abstractness debate. In §4.6 a final argument of a different type is presented.

4.1. Augment prefix

The augment prefix, a primary use of which is to add a causative meaning to a verb, has several suppletive allomorphs. The spell-out rule, with ordered clauses, is given as (13). Examples are given to the right of each clause.

(13) AUGMENT ⇒

a: [+Ablaut]	/	___ { C / [a: class] }	-a:-pókt	'make be full'
			-á:-?it	< /-a:-a?it/ 'make eat'
k [+Ablaut]	/	___ [k class]	-k-étk	< /-k-i:tk/ 'make drip'
a:k	/	___ V [+lo -lng]	-a:k-ánox	'make burn'
a:?	/	___	-a:?-á:s	'make dissolve'
			-a:?-óiɬ	'make blue'

The abstract analysis predicts that the allomorph which will occur with the Q-initial stems is the allomorph which occurs with consonant-initial stems: -a:-. Such is the case, as shown by the following forms: -á:-ɪ̄ʔWx 'make red', -á:-otoš-ot 'make suck'. The rule-feature analysis would have to mark these verbs as belonging to the [a: class] set of verbs since the allomorph -a:- is not expected before vowel-initial roots.

4.2. Passive prefix

The passive morpheme has two suppletive allomorphs whose distribution is basically determined by the phonological shape of what follows. The spell-out rule is given with examples in (14).

(14) PASSIVE ⇒

p [+Ablaut]	/	___ root[V	-p-éši	< /-p-iši/ 'be defeated'
a:?	/	___	-a:?-kášni	'be bitten'
			-a:?-a:?-ítaX	'be made to burn'

The abstract analysis predicts that Q-initial roots will take the allomorph -a:?- since they are consonant-initial. The concrete analysis predicts that these roots will take the allomorph -p- since it claims they are vowel-initial. The fact that the allomorph -a:?- and not -p- occurs supports the abstract analysis. Note the following forms: -a:?-áXš 'be hit' < /-a:?-QaXš/, -a:?-í: 'be felt' < /-a:?-Qi:/. (These forms also illustrate that the abstract consonant does not assimilate to a glottal stop.) The rule-feature analysis must mark these verbs as [a:? class] for the passive morpheme and the spell-out rule must be complicated accordingly.

The glottal stop of the passive prefix deletes by the following rule which is illustrated by the form ʔ-a:-sánx 'who was carried' < /ʔa-a:?-sanx/ and ʔi-ʔ-a:-kášni 'my being bitten' < /ʔi-ʔ-a:?-kašni/.

(15) ?-Deletion: ? → Ø / ? V ___ C

If it is the case that ?-Deletion applies before Q-Deletion, an additional argument may be made for the abstract analysis. The following examples show that this is indeed the case: ?-á:-otš 'what was sucked' < /?a-a:?-Qotš/, ?-á:-aXš 'what was hit' < /?a-a:?-QaXš/. The rule-feature solution must include an ad hoc minor rule deleting the glottal stop of the passive morpheme when the latter is preceded by a glottal stop.

4.3. Imperative prefix

The second person imperative prefix has a number of suppletive allomorphs. The spell-out rule, with ordered clauses, is given below with examples.

(16) SECOND PERSON IMPERATIVE ⇒

Ø / 1 SG OBJECT ___	i?po-Ø-sánx	'Carry me!'
	i?po-m-ó:kta	'Don't look at me!'
k / ___ NEGATIVE	k-m-ó:kta	'Don't look at him!'
Ø / 3 OBLIQUE ___ V [+lo, -lng]	kó:-Ø-mxk	/ko-Ø-amxk/ 'Take it to him!'
k / ___ V [+lo, -lng]	?e-k-ámxk	'Bring it to me!'
Ø [+Ablaut] / ___ V {[+lo], [+bac]} and the clause is superficially intransitive	átx	/Ø-otx/ 'Arise!'
	á:npX	/Ø-a:npX/ 'Return!'
? / ___	?-í:m	'Sleep!'
	i?-ká:	'Look for it!'

Note that when a glottal stop precedes a consonant at the beginning of an utterance, as in i?ká:, an i is inserted by the rule given as (17). (See Marlett 1981 for details.)

(17) i-Epenthesis: $\emptyset \rightarrow i$ / $\left\{ \begin{matrix} C \\ \# \end{matrix} \right\}$ ___ C C [+son]

Q-initial verbs behave like other verbs in cases where the first person singular object prefix occurs, in negative imperatives, or when detransitivized. Crucially, however, the abstract analysis predicts that these roots will take the allomorph ?- in other cases, never k- or Ø-. One would also expect that i-Epenthesis (17) might apply before Q-Deletion. Note that these expectations are fulfilled in the following data: i?-íšo 'Lift it!', i?-ámWx 'Be shiny!', i?-ótš 'Suck it!', i?-énx 'Play it!'. The rule-feature analysis does not make these predictions and hence these verbs,

or at least some of them, would have to be marked [? class] for imperatives in these situations. The spell-out rule would need to be complicated accordingly. Also, a minor rule inserting i would be necessary.

4.4. Action nominalizer

Under certain syntactic conditions, nominalized clauses occur using the forms shown below. The nominalizer has the following allomorphy, this spell-out rule also having ordered clauses.

(18) ACTION NOMINALIZER ⇒

Ø / ___ { V [+lo -lng]	ʔíː-Ø-fp	/ʔi-Ø-afp/ 'my arriving'
	ʔi-Ø-m-ótx	'my not arising'
	ʔi-Ø-p-étɬa	'my being poked'
C	ʔi-Ø-kóː X̌a	'my babysitting him'
? / ___ PASSIVE	ʔi-ʔ-aː-kášni	/ʔi-ʔ-aː-kašni/ 'my being bitten'
y [+Ablaut] / ___ V [+lo +bac]	and the clause is superficially intransitive	
	iʔ-y-átx	/ʔi-y-otx/ 'my arising'
	iʔ-y-áː-ʔš̌X	'my sneezing'
? / ___	ʔi-ʔ-óːkta	'my looking at it'
	ʔi-ʔ-áː-fk	'my pounding it'

The abstract analysis predicts that Q-initial verbs will take the zero allomorph, but the rule-feature analysis does not make this prediction. Note that the following data confirm the abstract analysis once again: mi-Ø-ótš̌ 'your sucking it', mí-Ø-iš̌o 'your lifting it', mi-Ø-ó+X 'your arguing (pl.)'. In the rule-feature analysis the geminating verbs must be specially marked to take the zero allomorph and the spell-out rule complicated accordingly.

4.5. Object nominalizer

Under certain other syntactic conditions, a nominalization referring to the object of the verb occurs. The major suppletive allomorphs of the object nominalizer are distributed by the following spell-out rule with ordered clauses.

(19) OBJECT NOMINALIZER ⇒

Ø / ___ NEGATIVE	mi-Ø-m-óːkta	'what you didn't look at'
Ø / ___ V [-lo -bac]	m-Ø-íp	'what you straightened'

y / ___ V [+lo +lng]	i?-y-á:šʸi	'what I carried'	
o [+Ablaut] / ___	?-o-pí:	/?i-o-pi:/	'what I tasted'
	?-o-ái	/?i-o-oi/	'whom I deloused'
	?-ó:-p	/?i-o-ap/	'what I sewed'

The abstract analysis predicts that affirmative Q-initial verbs will take the -o- allomorph and will not undergo Ablaut. The following data are therefore consistent with this analysis: ?-ó-i: 'what I felt', ?-ó-išx 'what I ground', ?-o-énx 'what I played'. The rule-feature analysis of course does not make this prediction and therefore must be complicated by marking many geminating verbs to take this allomorph when the negative morpheme is not present. The spell-out rule would also have to be complicated accordingly.

4.6. Third person oblique prefix

The Seri verb agrees with, among other things, certain oblique nominals. The third person oblique agreement prefix is /ko-/ but often occurs as k^w in surface forms. The rule accounting for the reduction of ko- to k^w- makes crucial reference to the presence or absence of certain consonants. Before a vowel or a single consonant followed by a vowel, for example, the allomorph k^w- always occurs: an k^w-áišʸkt 'Come in (pl.)!', k^w-yo-pánšʸx 'he ran like him'. Before certain clusters the reduction of ko- to k^w- is blocked: ko-k-pánšʸx 'he who runs like him', ko-?-pánšʸx 'Run like him!'.

The abstract solution predicts that the abstract consonant could block the rule referred to above 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 solution: ko-?-áxš 'Hit him with it!', ko-?-íšx 'Pound it with it!'. In the rule-feature solution these roots must be marked as not providing the environment for the reduction rule.

5. Comparison of analyses; Identity question

It has been shown in detail how two different analyses would handle these data. The abstract solution posits an abstract consonant, an assimilation rule, and a rule of absolute neutralization. In the rule-feature solution developed, the geminating verbs must be marked with at least six minus rule features, four minor rules, and five special features to ensure correct suppletive allomorphy. The number of rule features in the concrete analysis is significant and increases proportionately to the number of prefixes considered. (It should be noted that the prefixes involved are inflectional affixes.) The rule-feature analysis is considerably more complex than the concrete counterparts to other abstract analyses that have been proposed.

If the abstract solution is rejected, not only must the lexicon be complicated by marking geminating verbs for numerous exception features, but the complexity of the spell-out rules must be greatly increased, and four minor rules must be added to the phonology. Moreover, to reject the abstract solution is to reject a coherent and unified account of the facts in favor of a solution which claims that the exceptionality of geminating verbs is due to an ad hoc collection of arbitrary exception features (of more than one type). In every case in which new allomorphic alternations were considered, the abstract solution correctly predicted the very facts which complicated the concrete solution.

If one concludes that the abstract solution is preferable, as is concluded here, two other facts should be noted. First, there is no evidence for the abstract consonant occurring anywhere but in root-initial position. Brame 1972 (54) suggests that one condition on abstract segments should be that they have a distribution similar to other root segments. Second, and more importantly, there is no evidence as to what the underlying features of this abstract consonant are, in spite of another condition on abstract segments proposed by Brame 1972 and Kisseberth 1969. There is no gap evidence, no phonotactic evidence, and no evidence from any of the phonological rules to point to what class of consonant it might belong. Therefore there seems to be no way to identify this segment with chameleon-like properties. Kenstowicz and Kisseberth 1977 (57-8) points out that cases of this type have been described elsewhere, but suggests that in those cases there is some doubt that the abstract solution is clearly favored. There are two alternatives. First, one could arbitrarily give this consonant an identity. Such arbitrariness is undesirable, however. Second, one could posit what would be essentially a contrasting archisegment, in violation of constraints proposed in Stanley 1967 (full feature specification) and Postal 1968 (the Naturalness Condition). Therefore if what appears to be the best solution is adopted, certain basic constraints on the framework must be relaxed. Thus the abstract analysis pushes the abstractness issue to its limits, and all the more so because of the number of arguments in its favor.

6. Other frameworks

The preceding arguments for the abstract consonant have been based on the comparison of two analyses within the framework of 'standard' generative phonology. In this section I will briefly demonstrate that the Seri facts are significant, even problematic, regardless of the framework.

Consider first of all the third of Derwing's (1973:207) 'learnability' constraints on phonological systems: 'We choose as basic that one [alternate] of the available candidates for each morpheme which is least specific, i.e. from which the greatest amount of specific phonetic or other information can be extracted ....This form is taken to be the lexical representation most appropriate to the phonological system.' With respect to the root meaning 'feel' in Seri, which has the surface allomorphs -ki:, -ti:,

-si:, -mi:, and -i:, what does this constraint suggest as an underlying form? I am unable to tell. It is also not clear how the suppletive allomorphy would be handled.

For a theory such as 'Word and Paradigm' morphology, the Seri facts are important since Matthews 1972 (370) states that for an element to qualify as a morphophoneme in his system 'it must, first of all, be assigned some set of classificatory features. The more these features are natural rather than arbitrary, the more (ceteris paribus) it is likely to be justified.' Although this framework, which does not entirely reject abstractness, is different from that of standard generative phonology, the problem is the same; the proposed constraints are too strong.

Finally, I will point out two problems which arise upon attempting to analyze the Seri facts in a nontransformational framework in which allomorphs are handled by lexical representations with disjunctive sets (Hooper 1976, Hudson 1980). The verb meaning 'play (violin)' in Seri would be represented as in (20).

(20) / { k / t / s / m / Ø } enx/ 'play (violin)'

The rule accounting for the distribution of the allomorphs is given informally below.

(21) { k / t / s / m / Ø } → { k / k + ___ / t / t + ___ / s / s + ___ / m / m + ___ / Ø / elsewhere }

The first problem emerges when an underlying form contains more than one disjunctive set which are interdependent. Hudson 1980 (122) has termed this situation 'alternation indeterminacy'. Consider the following representation of the imperative form i?énx 'Play it!' in which the lexical forms of the morphemes are juxtaposed.

(22) { Ø / i } { Ø / k / Ø [+Abl] / ? } { k / t / s / m / Ø } enx

The problem is that the choice of allomorph for the imperative morpheme depends on the following segment, and the form of the root-initial segment depends on the resolution of the preceding disjunctive set. While Hudson 1980 suggests some possible solutions for other cases of alternation indeterminacy, it is not clear how the

many instances of this problem in Seri would be resolved.

The second problem which these few facts present has to do with the nature of the lexical forms. If rule (21) is formalized in terms of features, it might appear as in (23) where [αF] is used as a cover term for all features.

$$(23)\quad \left\{\begin{matrix} C \\ [\alpha F] \\ \emptyset \end{matrix}\right\} \rightarrow \left\{\begin{matrix} C & / & C & + & \_\_ \\ [\alpha F] & & \begin{bmatrix} +cns \\ \alpha F \end{bmatrix} & & \\ \emptyset & / & \text{elsewhere} & & \end{matrix}\right\}$$

Therefore the lexical form of 'play (violin)' would be (24).

$$(24)\quad /\left\{\begin{matrix} C \\ [\alpha F] \\ \emptyset \end{matrix}\right\} \text{enx} /$$

Of course, it is immediately apparent that this analysis is essentially just as abstract as that proposed in the standard theory.[6]

7. Conclusion

An abstract analysis for Seri was motivated by demonstrating that otherwise at least fifteen ad hoc complications to the phonology would be required. The fact that the phonetic nature of the abstract consonant cannot be determined synchronically provides evidence that some proposed conditions on abstract analyses and underlying forms are incorrect. It was also demonstrated that frameworks other than standard generative phonology do not escape unscathed by these facts.

Footnotes

*I thank Barbara Hollenbach, Margaret Langdon, Cathy Marlett, G. H. Matthews, Mary B. Moser, David Perlmutter, and Sanford Schane for their helpful criticisms. The usual disclaimers apply. I am especially grateful to Mary B. Moser and the late Edward W. Moser for access to the fieldnotes and unpublished manuscripts about verb morphophonemics on which this paper is based. I also appreciate the help of Roberto Herrera Marcos and Sergio Mendez Mendez of Desemboque, Sonora, in confirming and expanding these data.

[1]Most of the phonetic symbols used below have their normal values. Those that are exceptional or less standard are the following: e is a low front vowel, X is a voiceless back velar fricative; W is a slightly spirantized voiceless w. Also, for the sake of brevity, some of the rules are presented below in simplified versions.

[2]The prefix /i-/ occurs under certain conditions which are not simple to state. In the finite forms below it occurs when both subject and direct object are third person.

[3]Stress in Seri is assigned to the first vowel of the root. In some cases, including some of the forms in (9) below, the stress shifts in predictable ways to other vowels.

[4]The 'irregular' verbs which I have found are listed below, with the symbol 'Q' representing the abstract consonant that will be proposed. Intransitive verbs: /-Qa?/ 'make whistling sound', /-QamopXa/ 'lost', /-QamWx/ 'brilliant', /-QapXʷɬ/ 'brittle', /-QaŠaxox/ 'latticed', /-QaŠox/ 'perforated', /-QaX/ 'hard', /-Qi?Wx/ 'red', /-Qi:miX/ 'very much', /-Qoɬ/ 'argue', /-Qo:sx/ 'sprinkle'. Transitive verbs: /-Qaktim/ 'use, fix, touch', /-QaXš/ 'hit (with stick)', /-Qenx/ 'play (violin)', /-Qe:tni/ 'tap', /-Qim/ 'throw at', /-Qi:/ 'feel', /-QimoŠ/ 'think', /-QiŠo/ 'lift (heavy item)', /-QiŠx/ 'grind (to pulp)', /-QotŠ/ 'suck'.

[5]These phonetically long consonants must be interpreted phonologically as geminates and not long consonants since they provide the necessary conditions for i-Epenthesis (17) and another rule inserting o. Also see §4.6.

[6]Other facts of Seri present serious problems for this framework. To account for less esoteric problems in Seri phonology/morphology, this framework would apparently have to resort to extrinsic rule ordering also, among other undesirable things.

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