UNGRAMMATICAL AFFIXED WORDS IN THE HUOJIA DIALECT[*]

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ABSTRACT

D-words in the Huojia dialect all occur without a coda consonant or an off-glide and in some cases a mid vowel is added (He 1989, Lin 1993). Huojia D-word formation has been analyzed as having an underlying D-suffix /ə/ and an output template that bans codas and complex nuclei (Lin 2001a). Some roots, however, have no D-word counterparts, and the generalization is that any root that ends in a non-high nuclear vowel cannot have a D-word. Within Optimality Theory (OT, Prince and Smolensky 1993), two major proposals have been put forward to account for absolute ungrammaticality. The first is the MPARSE analysis (Prince and Smolensky 1993), in which the constraint MPARSE (which demands that the output must have a morphological structure) is ranked below relevant markedness constraints, and the Null Parse (an output that is phonetically unrealized because of the lack of a morphological structure) is then selected. The second is proposed by Orgun and Sprouse (1999) in which a component called CONTROL acts as a filter to check the grammaticality of the output selected by constraint evaluation in OT. This paper offers an account of the ungrammatical forms under Huojia D-word formation and argues that the CONTROL model is better able to capture the generalizations that a D-word cannot have a coda consonant/glide and that the absence of a D-word results from the requirement that a D-word must be distinct from its root.

Key words: Huojia Chinese, affixation, absolute ungrammaticality, ineffability, optimality theory

1. HUOJIA D-WORDS

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According to He (1989:2-4), Huojia, a Mandarin dialect of Henan Province, contains not only *er*-rimes similar to those found in Beijing Mandarin, but also *zi*-rimes, which function like the suffixation of *zi* in Beijing and Standard Mandarin, and D-rimes, which are specifically used for familiar local names, adjectives, adverbs and verbs with diminutive/hypocoristic and various grammatical functions. In this paper, I call a word that contains a D-rime a D-word and will discuss only the morphophonological alternations.[1] The examples in (1) show that Huojia D-words are without a coda consonant or an off-glide and that sometimes a mid vowel is added.

(1)   Root   D-word

    a.   li   ljɛ   'Li (surname)'

    b.   u   wə   'Wu (surname)'

    c.   law   lɔ   'old'

    d.   paj   pɛ   'white'

    e.   pan   pã   'to move'

    f.   tʰaŋ   tʰɔ̃   'to lie down'

    g.   lin   ljɛ̃   'to rent'

    h.   tɕiŋ   tɕjɔ̃   'to invite'

This set of Huojia data was analyzed previously under the non-linear phonology (Lin 1989, 1993) and the optimality-theoretic models (Lin 1996, 2001ab). The D-suffix was proposed to be either a mora (Lin 1993) or the default mid vowel /ə/ (Lin 2001ab). For the purposes of this paper, the underlying representation of the D-suffix is not crucial, and I assume an underlying /ə/ suffix for ease of exposition. The presence of an underlying D-suffix /ə/ accounts for the occurrence of a mid vowel in (1ab).   The fact that no D-word is allowed to have a coda consonant, an off-glide or a complex nucleus can be analyzed as resulting from the interaction of correspondence and markedness constraints in Optimality

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[1] For more details on the range of grammatical functions expressed by D-word formation, see He (1989:3).

Theory (OT). The first two constraints in (2) are correspondence constraints that demand input-output identity (McCarthy and Prince 1995, 1999). The markedness constraints in (2c-e) require that output representation does not contain marked structures. Since the output of D-word formation must be monosyllabic (Lin 1989, 1993, 1996), there is also an undominated monosyllabic templatic constraint, which will not be included in the OT tableaux for the sake of simplicity.[2]

(2) Constraints
  a. MAX-RT
    Every input segment in the root has a correspondent in
    the output.
  b. MAX-AF
    Every input segment in the affix has a correspondent in the
    output.
  c. *CODA
    Syllables must not have a coda.
  d. *COMPLEX
    No complex nucleus.
  e. *ə̃
    A nasalized schwa is not allowed.

Two sample tableaux are given in (3) and (4), which show how an off-glide and a coda consonant are banned from the output.[3] In (3), candidates (3ab), both of which contain a complex nucleus, are ruled out by high-ranking *COMPLEX. Candidate (3c) parses the suffix but removes the root vowel, hence violating MAX-RT. Both candidates (3de) fail to parse the suffix but candidate (3d) contains a coda glide. The winner, candidate (3e), avoids violation of *CODA by merging the nucleus vowel and the glide. Based on the standard OT analysis of coalescence, candidate (3e) does not violate MAX-RT since the outcome of the merger or coalescence of [a] and [w], i.e., [ɔ], has maintained the

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[2] This templatic constraint can be formulated as D-WORD=σ, a D-word must be monosyllabic, or as *[AFFIX]PW, an affix cannot form an independent prosodic word, (cf. Lin 2001abc).
[3] For a more comprehensive discussion and analysis of Huojia D-word formation, the reader is referred to Lin (1993, 2001ab).

correspondences with the original input segments, as indicated by the indexes: 1 for [a], 2 for [w], and both 1 and 2 for [ɔ].

(3)

la$_1$w$_2$ + ə	*COMPLEX	MAX-RT	MAX-AF	*CODA
a. laəw	*!			*
b. laə	*!	*		
c. ləw		*!		*
d. law			*	*!
☞e. lɔ$_{1,2}$			*	

Consider next the example in (4), in which the root has a nasal coda.

(4)

lin$_1$ + ə$_2$	*ə̃	*COMPLEX	MAX-RT	MAX-AF	*CODA
a. ljən					*!
b. lin				*!	*
c. liə		*!	*		
d. ljə			*!		
e. ljə̃$_{1,2}$	*!				
☞f. ljɛ̃$_{1,2}$					

Candidate (4a), which parses both the root and affix segments into one single syllable, cannot be optimal because it retains the coda consonant, and candidate (4b) fails to parse the suffix. Deletion of the coda consonant as in candidates (4cd) violates the high ranking MAX-RT constraint, and candidate (4c), which has two vowels, also violates *COMPLEX. Candidates (4ef) manage to avoid violating the two MAX constraints by syllabifying the high vowel as a prenuclear glide in the onset and by merging the schwa with the nasal into a nasalized vowel.

However, candidate (4e) contains a non-permissible nasalized vowel whereas the attested output in (4f) is able to satisfy all five constraints.[4] In both (3) and (4), we can see that *CODA, although it is low-ranking, is crucial to selecting the correct outputs by eliminating (3d) and (4a), which allows for the important generalization that a D-word cannot have a coda (Lin 1989, 1993, 1996).

There are, however, roots that have no corresponding D-words, for which previous works on Huojia D-word formation do not offer an account. The examples in (5) show that a root that ends in a non-high nuclear vowel has no D-word counterpart.[5] If we follow the analysis we have developed for Huojia D-word formation, we are not able to account for the examples in (5): as tableau (6) shows, a wrong output would be selected.

(5) Root   D-word

    ja   ---   *ja, *jaə   'sprout'

    xə   ---   *xə, *xəə   'box'

    tɕjɛ   ---   *tɕjɛ, *tɕjɛə   'eggplant'

    xwa   ---   *xwa, *xwaə   'flower'

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[4] Lin (2005) provides a discussion of why the combination of a schwa and [n] results in a nasalized mid front vowel. Note also that a disyllabic form such as [la.wə] for (3) and [li.nə] for (4) would be eliminated by the undominated templatic constraint mentioned earlier and in footnote 2.

[5] He (1989: 13) shows that a group of basic rimes do not have corresponding D-rimes. All these rimes either end in a non-high vowel or a non-high vowel plus a glottal stop and in this paper I discuss only the former type. An anonymous reviewer asks if the hypocoristic function in these cases is marked by other morphemes or intonation. Unfortunately, it is unclear from He's description and discussion how the functions of D-word formation are expressed in these cases.

(6) Wrong output selected

xwa + ə	*COMPLEX	MAX-RT	MAX-AF	*CODA
a. xwaə	*!			
☛b. xwa			*	
c. xwə		*!		

Note that the output that is selected is the one that is identical to the root. The intuition then is that if no repair process can create a distinct D-word for a root, then no D-word is allowed. That is, the reason why [xwa] cannot be the D-word for the root [xwa] is because a D-word cannot be identical to the root from which it is derived. Therefore, the absence of a D-word occurs as a result of the requirement that a D-word must be distinct from its root.

This paper provides an account of the lack of grammatical D-words for the roots like those in (5) and compares two approaches to absolute ungrammaticality in OT. In the next section, I provide an outline of two proposals that account for the lack of grammatical outputs in OT: MPARSE and CONTROL. Section 3 analyzes Huojia D-word formation under these two proposals. The final section concludes that the CONTROL analysis is better able to capture the crucial generalizations of Huojia D-word formation and also remarks on different theoretical approaches to absolute ungrammaticality.

2. ABSOLUTE UNGRAMMATICALITY: MPARSE VERSE CONTROL

Since in OT constraints are violable, absolute well-formedness of output cannot be the criterion to judge grammaticality, which predicts that for every input, some grammatical output, i.e., the optimal output, exists (cf. Kager 1999:400-403). One issue in OT then is how to account for cases of absolute ungrammaticality. There are two major proposals in the literature. The first is proposed by Prince and Smolensky (1993), in which the constraint MPARSE (which demands that the output must have a morphological structure) is ranked below relevant markedness constraints and the Null Parse (an output that is phonetically unrealized because of the lack of a morphological structure) is then selected. The

second is proposed by Orgun and Sprouse (1999), in which a component called CONTROL acts as a filter to check the grammaticality of the output selected by constraint evaluation in OT.

These two proposals can be illustrated with examples from *-ize* suffixation in English. In English, an output realization of *-ize* suffixation is possible when the stem does not have a final stress: *rándom-íze* versus **corrúpt-íze*. Raffelsiefen (1996) (cited in Kager 1999 and Orgun and Sprouse 1999; cf. Raffelsiefen 2004) provides an MPARSE analysis as shown in (7) and (8).

(7)

rǽndəm-ájz	IDENT	*CLASH	MPARSE
☞rǽndəmájz			
rəndówmájz	*!	*	
Null Parse			*!

(8)

kərʌ́pt-ájz	IDENT	*CLASH	MPARSE
kórəptájz	*!		
kərʌ́ptájz		*!	
☞Null Parse			*

The constraint MPARSE requires that an output must be parsed into morphological constituents. IDENT prohibits stress shift and *CLASH bars adjacent stressed syllables. A Null Parse candidate, which is phonetically unrealized, violates only MPARSE but not Faithfulness/Correspondence constraints. Tableau (7) shows that the Null Parse candidate loses to the first candidate since the winner does not incur any higher-ranked correspondence and markedness violations. On the other hand, the first candidate in (8), which is not faithful to the input due to stress shift, violates IDENT, and the faithful candidate, which maintains the same location of the stress, violates *CLASH. Therefore, Null Parse becomes the winner, which means that the stem *corrupt* has no output realization under *-ize* suffixation.

Orgun and Sprouse (1999) point out that an MPARSE analysis works only if one stipulates that the Null Parse candidate does not violate Faithfulness/Correspondence constraints. Note that if Null Parse were to incur a violation of IDENT in (8), the second candidate, which is unattested, would be selected. Orgun and Sprouse (1999) also demonstrate that many examples of absolute ungrammaticality cannot be analyzed under the MPARSE model. They then propose to add a component called CONTROL after EVAL in the OT grammar. CONTROL functions as an output filter and contains only inviolable constraints that cause ungrammaticality but do not lead to repair. The lack of grammatical output for *corrupt* under *-ize* suffixation can then be analyzed as in (9). In the EVAL component, the first candidate with stress shift to avoid violating *CLASH is selected. However, the constraint in the CONTROL component eliminates this candidate, and hence no output is realized.

(9)   *Clash: Two adjacent stressed syllables are prohibited.
       Head-Max: No deletion of the main stress of the morpheme
       Head-Id: The location of the head syllable of the output should be
                 the same as the location of the head syllable of the input.

In the EVAL component

kərʌ́pt-ájz	HEAD-MAX	*CLASH
☞kórəptájz		
kərʌ́ptájz		*!

In the CONTROL component

kərʌ́pt-ájz	HEAD-ID
✂ kórəptájz	*!

In this section, I have outlined two major approaches to absolute ungrammaticality in OT. It appears that both approaches can account for the English data. Orgun and Sprouse (1999), however, point out that some examples, such as the grammatical form *Serbize*, cannot be properly accounted for by the MPARSE analysis. They also document data from other languages to illustrate the failure of the MPARSE

approach. The reader is referred to their article for more details. In what follows, I compare how these two proposals account for the lack of grammatical outputs for roots ending in a non-high vowel in Huojia.

3. UNGRAMMATICAL D-WORDS IN HUOJIA: MPARSE OR CONTROL?

Recall from §1 that a licit D-word cannot be identical to the root from which it is derived. The relevant constraint can be formulated as DISTINCTSTEM: the unaffixed stem must be distinct from the affixed stem; i.e., zero affixation is prohibited (cf. Rose 1997, Urbanczyk 1998). Based on the same set of constraints presented in (2) plus the constraints MPARSE and DISTINCTSTEM, grammatical Huojia D-words can still be correctly selected as shown in (10) and (11). Tableau (10) shows that MPARSE must be ranked higher than MAX-AF so that candidate (10e) can be correctly selected and Null Parse can be ruled out. With this same ranking, the D-word for a root with a nasal coda can also be correctly selected, as shown in (11).

(10) MPARSE >> MAX-AF

$la_1w_2 + ə$	*COMPLEX MAX-RT	DISTINCT STEM	MPARSE	MAX-AF	*CODA
a. laəw	*!				*
b. laə	*!*				
c. law		*!		*	*
d. ləw	*!				*
☞e. $lɔ_{1,2}$				*	
f. Null Parse			*!		

(11) MPARSE >> MAX-AF

lin$_1$ + ə$_2$	*ə̃ *COMPLEX MAX-RT	DISTINCT STEM	MPARSE	MAX-AF	*CODA
a. ljən					*!
b. lin		*!		*	*
c. liə	*!*				
d. ljə	*!				
e. ljə̃$_{1,2}$	*!				
☞f. ljɛ̃$_{1,2}$					
g. Null Parse			*!		

If the root ends in a non-high nuclear vowel, however, Null Parse becomes optimal, as illustrated in (12). Candidates (12abc) all violate a constraint ranked higher than MPARSE, so candidate (12d), the Null Parse candidate, is selected. Note that DISTINCTSTEM must be ranked higher than MPARSE; otherwise, candidate (12b) would incorrectly become optimal. It is also crucial that Null Parse does not violate the Faithfulness/Correspondence constraints: MAX-RT and MAX-AF. Tableau (13) shows that if Null Parse were to violate MAX-RT, it would have been eliminated.

(12) Roots without grammatical D-words

xwa + ə	*COMPLEX MAX-RT	DISTINCT STEM	MPARSE	MAX-AF	*CODA
a. xwaə	*!				
b. xwa		*!		*	
c. xwə	*!				
☞d. Null Parse			*		

(13) Incorrect outputs if Null Parse were to violate MAX

xwa + ə	*COMPLEX	MAX-RT	DISTINCT STEM	MPARSE	MAX-AF
☞a. xwaə	*				
b. xwa			*		*!
☞c. xwə		*			
d. Null Parse		*!**		*	*

Although technically speaking, the MPARSE approach can show the lack of grammatical output for a root ending in a non-high vowel, the crucial requirement for Null Parse not to violate Faithfulness/Correspondence has been criticized as a pure stipulation (Kager 1999:403, Orgun and Sprouse 1999). In addition, Orgun and Sprouse (1999) have shown cases where the MPARSE approach fails, and additional theoretical and empirical weaknesses of the MPARSE approach have also been described (e.g., Rice 2005, 2006, Raffelsiefen 2004:130). For the analysis of Huojia D-word formation at hand, the MPARSE analysis rules out the non-distinct forms but does not provide a clear explanation why phonological repairs are possible in (10) and (11) but not possible in (12). In addition, the crucial generalizations about D-word formation, that a D-word must not have a coda and that the absence of a D-word results from the requirement of distinct stems, are not consistently conveyed through the analysis. For example, in (10), *Coda is not crucial to the selection of the optimal output (cf. (3) above and (15) below), and in (12), the selection of Null Parse is not directly caused by the avoidance of nondistinct stems since avoiding *COMPLEX and MAX-RT also contributes to the selection of Null Parse. These concerns lead us to question the adequacy of the explanatory power of the MPARSE analysis.

Consider now a CONTROL analysis of Huojia D-word formation. The fact that a root ending in a non-high vowel cannot have a D-word is accounted for by banning a D-word that is identical to the root in the CONTROL component, as shown in (14). Candidate (14b) is selected in the EVAL component since an attempt to combine both the root and the

suffix vowel, as in candidate (14a), or to replace the root vowel with the suffix vowel, as in candidate (14c), fares worse than the one that removes the suffix in (14b). This optimal candidate of the EVAL component, however, cannot survive since it is non-distinct from the root and therefore eliminated by DISTINCTSTEM in the CONTROL component. One advantage of such an analysis is that it matches well with the generalization that a root ending in a non-high vowel cannot have a D-word because no repair process is available and yet zero derivation without the suffix is not tolerated.

(14) In the EVAL component

xwa + ə	*COMPLEX	MAX-RT	MAX-AF	*CODA
a. xwaə	*!			
☞ b. xwa			*	
c. xwə		*!		

In the CONTROL component

xwa + ə	DISTINCTSTEM
✄ xwa	*!

This analysis also correctly allows grammatical D-words to surface, as shown in (15) and (16). The optimal outputs in (15) and (16) selected by the EVAL component survive the CONTROL component since they are not identical to the roots and hence do not violate DISTINCTSTEM.

(15) In the EVAL component

$la_1w_2 + ə$	*COMPLEX	MAX-RT	MAX-AF	*CODA
a. laəw	*!			*
b. laə	*!	*		
c. law			*	*!
d. ləw		*!		*
☞ e. $lɔ_{1,2}$			*	

In the CONTROL component

law + ə	DISTINCTSTEM
☞ lɔ	

(16) In the EVAL component

lin$_1$ + ə$_2$	*COMPLEX *ə̃	MAX-RT	MAX-AF	*CODA
a. ljən				*!
b. lin			*!	*
c. liə	*!	*		
d. ljə		*!		
e. ljə̃	*!			
☞f. ljɛ̃$_{1,2}$				

In the CONTROL component

lin + ə	DISTINCTSTEM
☞ ljɛ̃	

Note that both (15) and (16) show that *CODA plays a decisive role in EVAL for those roots with a coda consonant/glide, which, as in (3) and (4), captures the generalization that a D-word must be an open syllable without a coda. In comparison, this generalization is not manifested in the MPARSE analysis in (10). Placing DISTINCTSTEM in CONTROL is also consistent with the claim of Orgun and Sprouse that the constraints in CONTROL are related to morphology. Under the CONTROL analysis, the explanation for the lack of a D-word for a root ending in a non-high vowel is explicit and direct: a D-word that fails to be distinct from its root cannot be grammatical in Huojia. Moreover, placing DISTINCTSTEM external to EVAL also suggests that a D-word like [xwa]

would be grammatical in conformity to phonological competence since it is the output selected by EVAL, but it is not actually used in performance due to extra-grammatical pressure to avoid confusion as it is ruled out by DISTINCTSTEM in the CONTROL component.[6]

4. CONCLUDING REMARKS

The basic generalizations of Huojia D-word formation are that (i) a D-word cannot have a coda consonant/glide and (ii) a D-word must be distinct from its root, which leads to the absence of a D-word correspondent for a root ending in a non-high vowel. In the previous section, we saw that the MPARSE analysis of Huojia D-word formation fails to convey these basic generalizations and does not provide an adequate explanation as to why some D-words are possible but some are not. The CONTROL analysis, on the other hand, is able to capture the basic generalizations of Huojia D-word formation in a simple and more revealing way: first, *CODA plays a crucial role in selecting the optimal output that lacks a coda consonant/glide (as in (15) and (16)), and second, DISTINCTSTEM makes sure that any D-word that is non-distinct from its root is ungrammatical as in (14), whereby the absence of a D-word is explicitly connected with the prohibition of non-distinct stems.

One could ask if there have been found to be any theoretical or empirical problems with the use of the CONTROL approach to absolute ungrammaticality. The most common theoretical concern is the dramatic alteration of the OT architecture (e.g., Kager 1999, Rice 2005, 2006), but such a change may be necessary if it is justified and is able to predict correct patterns. Ganselow and Féry (2002) examine many cases of *ineffability* (which is defined as the failure of an input to find a surface realization) in phonology, morphology, syntax and semantics, and claim that the typology of ineffability is compatible with Orgun and Sprouse's CONTROL model and conclude that ineffability cases do not pose a problem for OT because they are located in domains of grammar outside of the OT architecture. To avoid the alteration of the OT architecture, Rice (2005, 2006) proposes an interesting alternative to both MPARSE and CONTROL by the evaluation of sets of candidates

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[6] Thanks to an anonymous reviewer for helping to bring out this point more explicitly.

belonging to the same morphological paradigms (McCarthy 2005), but his proposal at this point is applicable only to inflectional morphology and D-word formation is derivational. Raffelsiefen (2004) has pointed out some technical flaws of the CONTROL approach such as the undesirable duplication of the placing of the same constraint in both the EVAL and CONTROL components. Although Raffelsiefen endorses the MPARSE approach, he also acknowledges that the MPARSE approach has certain problems such as the difficulty in expressing degrees of ungrammaticality.

Given that the theoretical approach to absolute ungrammaticality is still under debate, this study contributes to the discussion by showing that the basic generalizations of Huojia D-word formation and the condition under which a D-word cannot be derived are better accounted for under the CONTROL approach than the MPARSE approach. In future research, it would be interesting to find out (i) if there are additional examples or processes either in Huojia or other Chinese languages that can further contribute to the discussion, and (ii) if an alternative approach along the lines of Rice's optimal gaps proposal (2005, 2006) can offer a better solution.

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