Revisiting Chain Shifts with Minimize Satisfaction
Resolving Conflicts Across Borders

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Abstract
We re-analyse several patterns of chain shifts, so far attested in numerous literature on this topic, as evidence in favour of MINIMIZE SATISFACTION (1) in phonology.

\begin{tabular}{ll}
\hline
(1)  & \textbf{MINSAT} (‘Minimize Satisfaction’): \\
     & \textbf{Müller} (2016) \\
     & An operation does not improve the satisfaction of more than one constraint. \\
\hline
\end{tabular}

Originally defined for analyses in Harmonic Serialism (McCarthy 2010), \textsc{MINSAT} has been proposed to account for counter-bleeding phenomena such as the interaction of /k/-palatalization and /i/-deletion in Bedouin Arabic (McCarthy 2007), also extended exponence and the \textit{Merge over Move} principle (Müller 2016). We show that, introduced to a parallel system such as OT (Prince and Smolensky 1993), \textsc{MINSAT} can straightforwardly derive counter-feeding processes, represented here with case studies on vowel chain shifts (/A/ \rightarrow [B], and /B/ \rightarrow [C], but /A/ \nrightarrow [C]).

1 Origins of \textsc{MINSAT}

Müller (2016) questions the cases when more than one operation can apply in the same domain. When it comes to precedence: it is usually assumed that simpler operations have priority.

- This is contrary to the core idea of Harmonic Serialism (McCarthy 2010), that the operations which satisfy the most constraints are applied first.

- In that sense cases of counter-bleeding in phonology, extended exponence in morphology and \textit{Merge over Move} in syntax are a problem for HS.

\textsc{MINSAT} is a meta-constraint: it ensures that the optimization does not change too many features by giving preference to operations that satisfy only one constraint.

\begin{tabular}{ll}
\hline
(2)  & \textbf{MINSAT} (‘Minimize Satisfaction’): \\
     & An operation does not improve the satisfaction of more than one constraint. \\
\hline
\end{tabular}

1.1 Extended Exponence

Cases of morphological realization where a single morpho-syntactic property is expressed by more than one exponent can be found in Archi:

\begin{tabular}{ll}
\hline
(3)  & a. gel-li \\
     & cup.SG-ERG \\
     & bridge.SG-ERG \\
     & c. qionn-i \\
     & b. gel-ul-ćaj \\
     & cup.PL-ERG.PL \\
     & d. qionn-or-ćaj \\
     & bridge.PL-ERG.PL \\
\hline
\end{tabular}
MINSAT blocks discharging two features at once by one exponent (Müller 2016). Discharge features remains visible for the next cycle (Noyer 1992).

(4) ¬CON (‘No Contradiction’): Stem and exponent must not bear contradictory features.  
IdNUM: A number feature on a stem is realised by an exponent with an identical feature.  
IdCASE: A case feature on a stem is realised by an exponent with an identical feature.  
UREAL (‘Uniqueness of Realisation’): A morpho-syntactic feature associated with a stem cannot be realised by more than one exponent.

(5) **step 1: plural marking**

<table>
<thead>
<tr>
<th>/gel[+pl,+erg]/</th>
<th>¬CON</th>
<th>IdNUM</th>
<th>MINSat</th>
<th>IdCASE</th>
<th>UREAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. gel[+pl,+erg]-um[+pl,1]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. gel[+pl,+erg]-or[+pl,II]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>c. gel[+pl,+erg]</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>d. gel[+pl,+erg]-i[−pl,+erg]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>e. gel[+pl,+erg]-ća]+pl,+erg]</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(6) **step 2: extended exponence**

<table>
<thead>
<tr>
<th>/gel[+pl,+erg]-um[+pl,1]/</th>
<th>¬CON</th>
<th>IdNUM</th>
<th>MINSat</th>
<th>IdCASE</th>
<th>UREAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. gel[+pl,+erg]-um[+pl,1]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. gel[+pl,+erg]-um[+pl,1]-i[−pl,+erg]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. gel[+pl,+erg]-um[+pl,1]-ća]+pl,+erg]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

(7) **step 3: convergence**

<table>
<thead>
<tr>
<th>/gel[+pl,+erg]-um[+pl,1]-ća]+pl,+erg]</th>
<th>¬CON</th>
<th>IdNUM</th>
<th>MINSat</th>
<th>IdCASE</th>
<th>UREAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. gel[+pl,+erg]-um[+pl,1]-ća]+pl,+erg]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. gel[+pl,+erg]-um[+pl,1]-ća]+pl,+erg]-i[−pl,+erg]</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. gel[+pl,+erg]-um[+pl,1]-ća]+pl,+erg]-ća]+pl,+erg]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>!</strong></td>
</tr>
</tbody>
</table>

1.2 Merge over Move

Operations have to be extrinsically ordered if they apply within the same domain. There is plenty of evidence for Merge applying before Move (Chomsky 2000).

(8) a. There1 seems [TP t1 to be [PP someone2 in the room]]
   b. *There1 seems [TP someone2 to be [PP t2 in the room]]

Move can be derived from more basic operations: Merge + Agree. Move satisfies two constraints at once: Merge and Agree, which violates MINSAT (Müller 2016)

(9) MERGEC (‘Merge Condition’): Edge features participate in Merge.
   AGREEC (‘Agree Condition’): Probes participate in Agree.
   NOTAMP (‘No Tampering Condition’): Linguistic expressions are not modified in the course of the derivation.

(10) **step 1: merge**

<table>
<thead>
<tr>
<th>[rT T ... [PP someone ...]], there</th>
<th>MERGEC</th>
<th>MINSat</th>
<th>AGREEC</th>
<th>NOTAMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [rT T ... [PP someone ...]]</td>
<td>**!</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. [rT there [rT T ... [PP someone ...]]]</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. [rT someone1 [rT T ... [PP t1 ...]]]</td>
<td>*</td>
<td>*</td>
<td>**!</td>
<td></td>
</tr>
</tbody>
</table>
11) step 2: move

<table>
<thead>
<tr>
<th></th>
<th>MergeC</th>
<th>MinSat</th>
<th>AgreeC</th>
<th>NoTAMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [\text{\textit{T} there \text{\textit{T} ... [PP someone ...]}]}</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>\textbf{\textit{\textbf{\textit{T} there \text{\textit{T} ... [PP someone ...]}]}</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

12) step 3: convergence

<table>
<thead>
<tr>
<th></th>
<th>MergeC</th>
<th>MinSat</th>
<th>AgreeC</th>
<th>NoTAMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [\text{\textit{T} there \text{\textit{T} ... [PP someone ...]}]}</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

1.3 Counter-bleeding in Bedouin Arabic

Bedouin Arabic exhibits second vowel syncope which interacts with palatalization of velar consonants (for failure of OT and HS to derive the opacity, see McCarthy (2007), Müller (2016)):

13) a. /hakim-in/ \rightarrow [hak\text{\text{\text{'}}im\text{\text{\text{\text{'}}}}]

14) *V/\_\sigma$: No stressless short vowel in a non-final syllable.

15) a. /hakim-im/  

16) step 2: deletion

17) step 3: convergence

2 MinSat and Chain Shifts

'The MinSat approach has nothing insightful to say about cases of counter-feeding, [...] and alternative accounts are readily available under present assumptions.' (Müller 2016:10)
2.1 Lena Spanish

Lena Spanish is a system with partial height harmony in stressed stem vowels, raising /a/ to /e/ and /e,o/ to /i,u/ in front of /u/ (18). Other features do not participate in the harmony process.

(18) Lena raising (Parkinson 1996)

<table>
<thead>
<tr>
<th>FEM.SG</th>
<th>MAS.SG</th>
</tr>
</thead>
<tbody>
<tr>
<td>gáta</td>
<td>gétu</td>
</tr>
<tr>
<td>néná</td>
<td>nímu</td>
</tr>
<tr>
<td>bóná</td>
<td>búnú</td>
</tr>
</tbody>
</table>

We assume vowels to be specified as in the standard SPE feature system (Chomsky and Halle 1968), and assume Spr(eading-L) constraints as the trigger (Finley 2008). MinSat acts as a ‘slow down’ mechanism here: not more than one feature value can be changed, thus being more of a faithfulness constraint.

(19) /a/ Ident [ e ] Spr-L [–high] → [αhigh] [+high] [–low] ← [αlow]

We assume vowels to be specified as in the standard SPE feature system (Chomsky and Halle 1968), and assume Spr(eading-L) constraints as the trigger (Finley 2008). MinSat acts as a ‘slow down’ mechanism here: not more than one feature value can be changed, thus being more of a faithfulness constraint.

(20) /gat-u/ MinSat Spr[–low] Spr[+high] Id[high] Id[low]

<table>
<thead>
<tr>
<th></th>
<th>MinSat</th>
<th>Spr[–low]</th>
<th>Spr[+high]</th>
<th>Id[high]</th>
<th>Id[low]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. gatu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. itu</td>
<td></td>
<td>![</td>
<td>]</td>
<td>![</td>
<td>]</td>
</tr>
<tr>
<td>c. getu</td>
<td>![</td>
<td>]</td>
<td>![</td>
<td>]</td>
<td>![</td>
</tr>
</tbody>
</table>

(21) /nen-u/ MinSat Spr[–low] Spr[+high] Id[high] Id[low]

<table>
<thead>
<tr>
<th></th>
<th>MinSat</th>
<th>Spr[–low]</th>
<th>Spr[+high]</th>
<th>Id[high]</th>
<th>Id[low]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. nemu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. ninu</td>
<td>![</td>
<td>]</td>
<td>![</td>
<td>]</td>
<td>![</td>
</tr>
<tr>
<td>c. getu</td>
<td>![</td>
<td>]</td>
<td>![</td>
<td>]</td>
<td>![</td>
</tr>
</tbody>
</table>

2.2 Nzebi

Nzebi vowel harmony also knows for one-step raising pattern, induced by a ‘fleeting suffix’ /-i/ (Clements 1991). This is a 4-height system where [high], [low] and [ATR] are active (22).

(22) Nzebi raising (Clements 1991)

<table>
<thead>
<tr>
<th></th>
<th>Id[low]</th>
<th>Spr</th>
<th>Id[ATR]</th>
<th>Spr[+ATR]</th>
<th>Spr[+high]</th>
<th>Id[low]</th>
</tr>
</thead>
</table>

Similarly to Lena Spanish, MinSat is the constraint that allows maximally one feature to be changed in the harmony process. Since candidates b. and c. are harmonically bounded by Id(ENT)[LOW], the relative ranking of the lower-ranked MinSat w. r. t. Spr(ead)[+ATR] decides the winner.

(23) /a/ Ident [ e ] Spr-L [–high] → [αhigh] [+high] [–low] ← [αlow]

(24) /sal-i/ MinSat Spr[–low] Id[low] Id[low] | Spr[+ATR] | Spr[+high] | Id[high] | Id[ATR]

<table>
<thead>
<tr>
<th></th>
<th>Spr[–low]</th>
<th>Id[low]</th>
<th>MinSat</th>
<th>Spr[+ATR]</th>
<th>Spr[+high]</th>
<th>Id[high]</th>
<th>Id[ATR]</th>
</tr>
</thead>
<tbody>
<tr>
<td>d. sli</td>
<td>![</td>
<td>]</td>
<td>![</td>
<td>]</td>
<td>![</td>
<td>]</td>
<td>![</td>
</tr>
</tbody>
</table>
2.3 Bassá

Previous cases have shown rather symmetrical raising patterns, but there are also languages such as Bassá (Parkinson 1996) or Ticino Canton (Canalis 2016), where vowel /a/ skips a step, raising to [e] instead of [ɛ].

(27) Bassá vowel raising (Parkinson 1996)

\[
\begin{align*}
\text{stem} & \quad \text{ind. caus} \\
\text{fiak} & \quad \text{beg-}^1\text{ha} \quad \text{‘weave’} \\
\text{pecp} & \quad \text{peb-}^1\text{ha} \quad \text{‘winnow’} \\
\text{yɔn} & \quad \text{yop-}^1\text{ha} \quad \text{‘take’} \\
\text{sej} & \quad \text{sin-}^1\text{ha} \quad \text{‘rub, polish’} \\
\text{top} & \quad \text{tup-}^1\text{ha} \quad \text{‘sing’}
\end{align*}
\]

As shown in (27), in Bassá both /a,ɛ/ raise to /e/, which both Parkinson (1996) and Schmidt (1994) take as evidence that they are of the same height, namely [+low]. The analysis, based on MINSAT, does not need to assume that for /ɛ/; see (30). Note that even though MINSAT is lower-ranked, it gets to decide the winner.

(30)

<table>
<thead>
<tr>
<th>/fiag-^1/</th>
<th>Spr[+ATR]</th>
<th>Spr[–low]</th>
<th>MINSAT</th>
<th>Id[low]</th>
<th>Id[ATR]</th>
<th>Spr[+high]</th>
<th>Id[high]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. fiag-^1</td>
<td>!</td>
<td>!</td>
<td></td>
<td></td>
<td></td>
<td>!</td>
<td></td>
</tr>
<tr>
<td>b. fig-^1</td>
<td>*</td>
<td>!</td>
<td></td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
</tr>
<tr>
<td>c. fig-^1</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
</tr>
<tr>
<td>d. fieg-^1</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
</tr>
</tbody>
</table>

(31)

<table>
<thead>
<tr>
<th>/pecb-^1/</th>
<th>Spr[+ATR]</th>
<th>Spr[–low]</th>
<th>MINSAT</th>
<th>Id[low]</th>
<th>Id[ATR]</th>
<th>Spr[+high]</th>
<th>Id[high]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. pecb-^1</td>
<td>!</td>
<td></td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
</tr>
<tr>
<td>b. peb-^1</td>
<td>*</td>
<td></td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
</tr>
<tr>
<td>c. pig-^1</td>
<td></td>
<td></td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
</tr>
</tbody>
</table>

**Predictions of this approach:**

Depending on the relative ranking of MINSAT w. r. t. to other constraints, partial vowel harmonies would be symmetrical, with all vowels performing one step change, or asymmetrical, with some vowels skipping steps. In total harmony, MINSAT would be outranked by all harmony triggers, thus having no effect on the spreading of features.
3 Previous approaches

All the previous approaches to chain shifts can account for the ‘canonical’ cases of chain shifts, as well as ours. However, it is the predictions for the entire structure of grammar that make them problematic.

3.1 Rule-ordering

   b. [–low, –high] → [+high] / __ {–u} [–low] / __ {–u}

(33) Derivation

\[
\begin{array}{c|cc}
\text{UR} & a & e \\
[-low, -high] & \rightarrow & [+high] / __ {–u} \\
\end{array}
\]

\[
\begin{array}{c|cc}
\text{SR} & e & i \\
\end{array}
\]

(34) Problem: Two rules for one process, in the same place, for the same reason.

\[\text{Rules tend to be ordered so as to become maximally transparent. If the two rules enter the grammar at the same time, there is no reason for them to order themselves in a counterfeeding order.}\]

3.2 A Hierarchical Model of Vowel Height

Clements (1991) postulates that vowel height is a uniform phonological dimension, an abstract phonological space divided into a series of registers.

(35)  

\[
\begin{array}{ccccccc}
\text{open} & - & + \\
\text{mid} & - & + \\
\text{high} &  & + \\
\end{array}
\]

\[i \ u \ i \ u \ e \ o \ a\] (Clements 1991:39)

(36) Problem: Doesn’t have an application outside of vowel harmony.

3.3 Incremental Constriction Model

Parkinson (1996) proposed ICM, which characterizes vowel height as multiple occurrences of the monovalent feature [closed], where each instance corresponds to a step along the height continuum.

(37) Three vowel heights system

<table>
<thead>
<tr>
<th>closed</th>
<th>high</th>
<th>mid</th>
<th>low</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
</tbody>
</table>

(38) 

<table>
<thead>
<tr>
<th>/a/ + {u}</th>
<th>Align[closed]</th>
<th>Ident[closed]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>a</td>
<td>*!</td>
</tr>
<tr>
<td>b</td>
<td>i</td>
<td>**!</td>
</tr>
<tr>
<td>c</td>
<td>e</td>
<td>*</td>
</tr>
</tbody>
</table>

(39) Problem: Additional stipulative constraint is needed to stop the raising of high vowels to even higher.
3.4 Ternary Scales

Any combination of elements adjacent on the scale can act together; non-adjacent elements may not act together. (Gnanadesikan 1997)

(40) IDENTICAL-[HIGH]: Assign a violation mark for every vowel not specified as [high].
ADJACENT-[HIGH]: Assign a violation mark for every vowel more than one step on the scale away from [high].
IDENT-ADJ: No output may deviate from the input by more than one step on the scale.
IDENT[VH]: Input and output vowels share the same height.

(41) | /a/ + {u} | Ident-Adj | Identical-[high] | Adjacent-[high] | Ident[VH] |
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>a. a</td>
<td></td>
<td>*</td>
<td>#</td>
<td></td>
</tr>
<tr>
<td>b. e</td>
<td></td>
<td>*</td>
<td>#</td>
<td>*</td>
</tr>
<tr>
<td>c. i</td>
<td></td>
<td>*</td>
<td>#</td>
<td></td>
</tr>
</tbody>
</table>

(42) Problem: Contrary to the concepts of phonological grammar, OT and underlying forms.

But /a/ is specified with a [high] feature, as well as /e/ and any other vowel in the system. Height features, the way she looks at them, seem unary [high], [mid] and [low].

3.5 Abstract Scales

For Mortensen (2004), related items are arranged on abstract unlimited scales.

(43) H = {i}₂ > {e}₁ > {a}₀

(44) HIGHER(H): Output realisations are higher on the scale than the input.
SAME(H): Outputs are of the same height as inputs.
ENDMOST(H): Assign a violation for every step away from the end of a scale.
DIFFERENT(H): Outputs are not of the same height as inputs.

(45) | /a/ + {u} | Higher(H) | Same(H) | Endmost(H) | Diff(H) |
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>a. a</td>
<td></td>
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<tr>
<td>b. e</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>c. i</td>
<td></td>
<td></td>
<td></td>
<td>**!</td>
</tr>
</tbody>
</table>

(46) Problem: These scales have no phonetic substance behind them. But representations and processes do (cf. van Oostendorp (1995), de Lacy (2006), Casali (1997)).

3.6 Local Conjunction

3.6.1 Martínez-Gil (2006)

(47) | /a/ + {u} | *[low, -ATR] | Ident[high] | Agree & Ident[low] | V-Height | Ident | Ident | Ident |
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. a</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>b. e</td>
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<td>c. e</td>
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<td>e. i</td>
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</tbody>
</table>

(48) Problem: The unclear AGREE V-HEIGHT constraint which seems to be gradient.
3.6.2 Kirchner (1996)

(49) **RAISING**: Maximize vowel height (in verbs when occurring with certain tense and aspect affixes).

(50) \[
\begin{array}{|c|c|c|c|}
\hline
/a/ + \{i\} & Parse[low] & Parse[ATR] & Raising \\
\hline
a. a & & & ***! \\
\hline
b. e & (only Parse[low]) & & ** \\
\hline
c. e & #! & & * \\
\hline
d. i & #! & & * \\
\hline
\end{array}
\]

(51) **Problem**: The grammar can look forward and refer directly to gradient phonetic facts, contrary to the idea of phonological representations.

3.7 ‘Preserve Contrast’

‘Preserve Contrast’ requires pairs of words to preserve the underlying contrast w. r. t. to a certain phonological property on the surface. This approach evaluates sets of mappings, *scenarios* rather than candidates.

(52) \[
\begin{array}{|c|c|c|c|}
\hline
\text{Chain Shift} & \text{Transparent} & \text{Total Merger} & \text{Identity} \\
\hline
a → e & a → e & a → i & a → a \\
\hline
e → i & e → e & e → i & e → e \\
i → i & i → i & i → i & i → i \\
\hline
\end{array}
\]

(Łubowicz 2011, 2013)

(53) \[
\begin{array}{|c|c|c|c|c|}
\hline
/a, e, i/ + \{u\} & \*Central & PC\text{IN} \text{(back)} & PC\text{OUT} \text{(back)} & PC\text{IN} \text{(high)} & PC\text{OUT} \text{(high)} \\
\hline
\text{Chain Shift} & \text{Transparent} & \text{Total Merger} & \text{Identity} \\
\hline
a. a → e, e → i, i → i & & & * \{e, i\} * \{i\} \\
\hline
b. a → e, e → e, i → i & *! \{a, e\} *! \{e\} & & \\
\hline
c. a → i, e → i, i → i & *! \{a, e\} *! \{i\} & * \{e, i\} * \{i\} & \\
\hline
d. a → a, e → e, i → i & *! & & \\
\hline
\end{array}
\]

(54) **Problem**: No optimal candidate, only optimal system. There are only-input-oriented and only-output-oriented constraints. Not every instance of central vowel is neutralized in the language.

3.8 Candidate Chains

(55) **PRECEDENCE** (Con1, Con2): Any single violation of ‘Con2’ must be preceded in the chain by a violation of ‘Con1’ and must not be followed by a violation of ‘Con1’. (McCarthy 2007)

(56) \[
\begin{array}{|c|c|c|c|c|}
\hline
/a/ + \{u\} & *[+low] & Ident \text{ [low]} & \text{PRECEDENCE} & *[−high] & Ident \text{ [high]} \\
\hline
\text{Ident} & \text{Ident} & \text{Ident} & \text{Ident} & \text{Ident} & \text{Ident} \\
\hline
\text{low} & \text{high} & \text{low} & \text{high} & \text{low} & \text{high} \\
\hline
\text{[−u]} & \text{[−u]} & \text{[−u]} & \text{[−u]} & \text{[−u]} & \text{[−u]} \\
\hline
\end{array}
\]

(57) **Problem**: There is no difference between **PRECEDENCE** and a rule-based analysis.
3.9 No Synchronic Chain Shifts

Neasom (2016) argues that there is no such thing as a synchronic chain shift, one of the arguments being that synchronic chain shift are always conditioned in some way (by suffixation or similar processes). He raises the problem of learnability of chain shifts, whether the speaker learns them as phonological computation or as given properties of lexical items, pre-specified in the input. The biggest problem in synchronic chain shifts Neasom sees in the fact that the set of chain shifts processes is not coherent, thus there is no reason why the same theoretical apparatus should be used to model all of these processes.

(58) Question: If phenomena in the grammar appear to function in the same way, why should they not receive the same treatment in theoretical sense?

4 Conclusion

Chain shifts have been addressed in numerous ways, none of them having any application outside of phonology. The current proposal contributes to the idea that processes in different areas of grammar can be governed by identical mechanisms such as MinSat. It reflects the underlying idea, shared by all chain shift proposals, that sometimes grammars do not want to deviate too much from the original input.

References


