1 Introduction

Dissimilation prototypically refers to a situation in which a segment becomes less similar to a nearby segment with respect to a given feature. As a synchronic alternation, it can be exemplified by liquid dissimilation in Georgian, where the ethnonym-forming suffix {-uri} becomes [uli] when an /r/ precedes it anywhere within the word (Fallon 1993, Odden 1994). The resulting pattern of alternation is shown in (1).

(1) Georgian r-dissimilation
   a. p’olon-uri ‘Polish’
      somx-uri ‘Armenian’
   b. sur-uli ‘Assyrian’
      p’rusi-uli ‘Prussian’
   c. avst’ral-uri ‘Australian’
      kartl-uri ‘Kartvelian’

In (1a), the suffix surfaces in its basic (non-dissimilated) form. The forms in (1b) illustrate the result of unbounded dissimilation within the word. In the word meaning ‘Prussian’ it takes place despite the presence of the intervening consonant. If a lateral /l/ intervenes between the two rhotics, however, dissimilation does not apply. This is shown in (1c).

A very similar example of liquid dissimilation comes from Latin (e.g. Kent 1936, 1945, Steriade 1987), where the alternation is reversed. The adjectival suffix -ālis, as in nāvālis ‘naval’, dissimilates to -āris whenever another /l/ precedes in the word, e.g. nānāris ‘lunar’. Dissimilation is similarly blocked whenever /r/ intervenes between the trigger and the target, e.g. flōrālis ‘floral’, *flōrāris.

As a diachronic change, dissimilation is most often sporadic, applying to random lexical items (Posner 1961). The historical development of Latin and the Romance languages furnish several examples of sporadic liquid dissimilation,
e.g. Latin *arbor* > Spanish *arbol* ‘tree’, *peregrīnus* > Late Latin *pelegrīnus* ‘pilgrim’. Regular synchronic alternations involving dissimilatory processes are far more rare and, as a result, dissimilation has been afforded somewhat less systematic attention than other more common segmental patterns like assimilation. Nevertheless, the study of dissimilation phenomena offers a valuable source of insights into the fundamental questions phonologists ask. These questions include (i) the nature of rules and representations, and the relation between the two, (ii) the division of labour between the grammar and the lexicon and (iii) whether phonological patterns reflect possibly innate cognitive biases or extralinguistic factors operating during acquisition.

The organization of the remainder of this chapter is as follows. §2 sets out the major parameters of dissimilation, explaining which features participate, along with restrictions on the interaction of context and focus determined by locality and domain of application. §3 addresses the contribution that the study of dissimilation phenomena has made to phonological theory, assessing how it has shaped our understanding of both representations and rules. §4 provides an overview of the motivations for dissimilatory patterns proposed in the literature. Conclusions and questions for future research are given in §5.

2 Dissimilatory patterns and their parameters

2.1 Participating features

Suzuki (1998) presents a comprehensive survey of cross-linguistic dissimilatory patterns. His survey includes 39 dissimilatory alternations. Table 1 provides a somewhat revised summary with a total of 46 alternations, adducing a few additional cases not covered in Suzuki’s original survey, and suppressing cases which on closer inspection turn out not to be true dissimilation.1 The second column of the table specifies the locality condition on the process (for illustration of dissimilations with different locality conditions, see §2.2). Also indicated is the direction of dissimilation and, in case the language has more than one, the number of dissimilative patterns. The number of progressive and regressive dissimilations are more or less evenly split, with 21 and 24 cases respectively.
<table>
<thead>
<tr>
<th>Feature</th>
<th>Locality</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>unbounded</td>
<td>Akkadian (R: Soden 1969; McCarthy 1979; Yip 1988; Hume 1992; Odden 1994), Tashliht Berber (2×R; see refs), Palauan (R; see references above)</td>
</tr>
<tr>
<td>coronal</td>
<td>Rt</td>
<td>Dakota (R: Shaw 1976, 1985)</td>
</tr>
<tr>
<td>rhotic</td>
<td>Rt</td>
<td>Ainu (R: Maddieson 1984; Shibatani 1990)</td>
</tr>
<tr>
<td>cont</td>
<td></td>
<td>Seri (R: Marlett &amp; Stemberger 1983; Yip 1988), Cuzco Quechua (R: Parker 1997)</td>
</tr>
<tr>
<td>nasal</td>
<td>Rt</td>
<td>Chukchi (R: Odden 1987)</td>
</tr>
<tr>
<td>high</td>
<td></td>
<td>Guere (R: Paradis &amp; Prunet 1989)</td>
</tr>
<tr>
<td>low</td>
<td>Rt</td>
<td>Arusa (R: Levergood 1987), Wintu (Pitkin 1984)</td>
</tr>
<tr>
<td>length</td>
<td></td>
<td>Marshalal (R: Bender 1968, 1969; Kenstowicz &amp; Kisseberth 1977), Woleaian (R: Sohn 1975; Sohn &amp; Taweril mang 1976; Poser 1982)</td>
</tr>
<tr>
<td>H</td>
<td>unbounded</td>
<td>Bantu (P: Goldsmith 1984; Odden 1994)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bantu (P: Goldsmith 1984; Odden 1994)</td>
</tr>
<tr>
<td>L</td>
<td>unbounded</td>
<td>Peñoles Mixteco (P: Daly 1993; Odden 1994)</td>
</tr>
</tbody>
</table>
Major class features such as [consonantal], [sonorant] and [approximant] do not appear to participate in dissimilation. The existence of some of these features is indeed contested in the literature. While there is something of a consensus that [sonorant] is necessary,\(^2\) Hume & Odden (1996) propose that [consonantal] may be dispensed with. There is also a widespread assumption that the feature [approximant] is not contrastive in language, although see Levi (2008) for evidence to the contrary.

Beyond the major class features, all classes of feature may be involved in dissimilation, including place of articulation, laryngeal state, manner (continuancy, liquid, nasality), vowel height, and suprasegmental properties such as length and tone. We shall illustrate some of these in this section; other alternations that raise particular theoretical issues will be illustrated in the relevant sections. Thus, see § for examples of nasal dissimilation, and §4.3 for continuant dissimilation.

Of the place of articulation features, only [labial] dissimilation is common. Labial dissimilation is illustrated in (2) with data from Tashlhiyt Berber (Odden 1994). The labial nasal /m/ in a prefix dissimilates to [n] if the stem contains a labial consonant anywhere within it.

(2) **Labial dissimilation in Tashlhiyt Berber**

<table>
<thead>
<tr>
<th>a. las</th>
<th>'shear'</th>
<th>am-las</th>
<th>'shearer'</th>
</tr>
</thead>
<tbody>
<tr>
<td>agur</td>
<td>'remain'</td>
<td>am-agur</td>
<td>'abandoned'</td>
</tr>
<tr>
<td>b. 'rmì</td>
<td>'be tired'</td>
<td>an-'rmì</td>
<td>'tired person'</td>
</tr>
<tr>
<td>bur</td>
<td>'remain celibate'</td>
<td>an-bur</td>
<td>'bachelor'</td>
</tr>
<tr>
<td>'azum</td>
<td>'fast'</td>
<td>an-'azum</td>
<td>'faster'</td>
</tr>
</tbody>
</table>

Dissimilation of [coronal] is only attested in a single case, Dakota (Shaw 1976, 1985). Underlying coronal non-continuants /t ð n ð/ are all neutralized to [k] (or, with regressive voicing assimilation, [g]) before another coronal consonant. The examples in (3) are from Shaw (1985: 184); see also Shaw (1976: 337).

(3) **Coronal dissimilation in Dakota reduplication**

<table>
<thead>
<tr>
<th>a. /ték/</th>
<th>ték-ték</th>
<th>'stagger'</th>
</tr>
</thead>
<tbody>
<tr>
<td>/tap/</td>
<td>tap-tap</td>
<td>'trot'</td>
</tr>
<tr>
<td>/čis/</td>
<td>čis-čiza</td>
<td>'draw tight'</td>
</tr>
<tr>
<td>/khuf/</td>
<td>khuf-khufa</td>
<td>'lazy'</td>
</tr>
</tbody>
</table>
There are apparently no attested examples of dissimilation involving the feature [dorsal].

Alternations involving laterals and rhotics are relatively common. We shall provide examples of liquid dissimilation in §2.2 in connection with the discussion of locality parameters.

Several Australian languages show dissimilation of prenasalized stops or nasal + stop clusters (NC). In Gurindji (Pama-Nyungan, Northern Territory; McConvell 1988, Odden 1994), this process is unbounded, e.g. /lutcu-ŋka/ ‘ridge’, /pinka-ŋka/ → [pinka-ka] ‘river-LOC’, /kankula-mpa/ → *[kankula-pa] ‘high ground-LOC’.

Several languages have restrictions on consecutive heavy nuclei that do not appear reducible to prosodic structure. In Slovak, for example, a long nucleus becomes short following a long nucleus, according to a rule known as the Rhythmic Law (Rubach 1993: 172–175). Thus, the suffixes [-a] (FEM SG) and [-emu] (DAT SG) shorten their first vowel following a long vowel, e.g. [maľ-a] ‘small-FEM SG’ vs. [ml:kv-a] ‘silent-FEM SG’; [maľ-emu] ‘small-MASC DAT SG’ vs. [ml:kv-emu] ‘silent-MASC DAT SG’. The alternation is apparently unrelated to stress (Rubach 1993: 41–42). At least in Western Slovak, main stress falls on the initial syllable of the word, and sources report a binary stress pattern, some with the possibility of ternary alternation. The Rhythmic Law nevertheless applies in odd-numbered syllables, where we would expect resumption of secondary stress on a binary alternating pattern. This is shown by derivations with the agentive suffix [-nik] and the diminutive [-ik], e.g. [hufnik] ‘steelworker’ vs. [ţaľumnik] ‘wallpaperer’, [chleťnik] ‘bread’ vs. [dţbanik] ‘pot’.

Several languages of Vanuatu have productive Low Vowel Dissimilation (Lynch 2003). In Maskelynes (Malayo-Polynesian), the nominalizer prefix is realized as [na-] when the following vowel is low /e a o/, and [na-] following a high vowel /i a u/.

(4)  a. na-vis  ‘banana’
    na-xamar  ‘men’s house’
    na-xut  ‘louse’
  b. na-matu  ‘right (hand)’
    na-gor  ‘green coconut’

Dissimilation is occasionally also used to refer to the deletion of one of a pair of similar neighbouring sounds. Hall (2009), for example, describes this phenomenon with reference to /r/ in American English, in principle giving
alternations like [fɔm] farm vs. [fɑm] farm, and [iʃən] eastern vs. [iʃənə] easterner.

All the cases we have looked at so far involve the elimination of sequences of similar sounds. Preventive dissimilation is when the creation of new sequences of similar sounds is blocked. One example is provided by Inari Saami (Itkonen 1986–91), which has a morphologically conditioned process of consonant gradation. An overlong obstruent in the ‘strong’ grade generally alternates with the corresponding singleton in the ‘weak’ grade, as shown in (5). In each of the examples below, the strong grade form on the left represents the nominative singular, the weak grade form on the right the accusative-genitive singular. Examples have been adapted from Finno-Ugric transcription into IPA, according to the conventions set out in Bye et al. (2010); [ʌ] is a somewhat low central vowel. With the breve, [ɔ], it is ‘ultrashort’.

(5) Inari Saami consonant gradation (obstruents)

\[
\begin{align*}
tsuo:p^{\check{\text{u}}} & \quad tsuo:p^{\check{\text{u}}} \quad \text{‘meat of fish’} \\
fa:t^{\check{\text{A}}} & \quad fa:t^{\check{\text{A}}} \quad \text{‘yard’} \\
\text{pefi} & \quad \text{pefi} \quad \text{‘mud, slush’}
\end{align*}
\]

Under normal circumstances, the overlong aspirated velar stop /kʰ/ alternates with /h/, as shown in (6). This may be taken to reflect a general process that debuccalizes /kʰ/, leaving bare [h].

(6) Inari Saami consonant gradation: Debuccalization of aspirated velar stop

\[
\begin{align*}
kak:k^{\check{\text{u}}} & \quad kaahu, *kaak^{\check{\text{u}}} \quad \text{‘unleavened rye-bread’} \\
\text{fok:k^{\check{\text{i}}} \quad fohii, *fok^{\check{\text{i}}} \quad \text{‘peak, summit’} \\
kak:kk^{\check{\text{A}}} & \quad kaalh^{\check{\text{a}}, *kaalk^{\check{\text{A}}} \quad \text{‘chalk’}
\end{align*}
\]

However, there is one situation where debuccalization to [h] fails to take place. As (7) shows, this is when the onset of the preceding syllable is also /h/.

(7) Inari Saami consonant gradation: Debuccalization blocked

\[
\begin{align*}
hik:k^{\check{\text{i}}} & \quad hii:k^{\check{\text{i}}, *hihi} \quad \text{‘hay-basket’} \\
hak:k^{\check{\text{A}}} & \quad haak^{\check{\text{A}}, *haah^{\check{\text{A}}} \quad \text{‘canon’} \\
hul:kk^{\check{\text{A}}} & \quad huulk^{\check{\text{A}}, *huulh^{\check{\text{A}}} \quad \text{‘knife-sheath’}
\end{align*}
\]

2.2 Locality and domains

Dissimilation may be associated with one of three locality conditions listed in (8). This parameter was first addressed in detail by Odden (1994). Suzuki’s (1998) survey largely confirms this picture.
(8) **Locality conditions**

a. Root-adjacency  
b. Syllable adjacency  
c. Unbounded

Liquid dissimilation may be used to exemplify all three locality conditions. Ainu, a language isolate of Japan, illustrates the root-adjacency condition (Shibatani 1990: 13). Given an underlying cluster /r-r/, the first /r/ dissimilates to [n], as shown in (9).

(9) **Ainu r-dissimilation**

<table>
<thead>
<tr>
<th>Ainu r-dissimilation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>kukor kur</td>
<td>‘my husband’</td>
</tr>
<tr>
<td>kor mat</td>
<td>‘his wife’</td>
</tr>
<tr>
<td>kukon rusuj</td>
<td>‘I want to have (something)’</td>
</tr>
<tr>
<td>kon rametok</td>
<td>‘his bravery’</td>
</tr>
</tbody>
</table>

Yimas (Foley 1991: 54), a Sepik-Ramu language of Papua New Guinea, illustrates liquid dissimilation operating under syllable adjacency. An/r/ dissimilates to [t] if there is an /r/ in the immediately preceding syllable. The examples in (10) show variation in the shape of the inchoative suffix {-ara} (1991: 290).

(10) **Yimas r-dissimilation**

<table>
<thead>
<tr>
<th>Yimas r-dissimilation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>tuak-ara-</td>
<td>‘break open’</td>
</tr>
<tr>
<td>kamprak-ara-</td>
<td>‘snap’</td>
</tr>
<tr>
<td>apr-ata-</td>
<td>‘open, spread’</td>
</tr>
</tbody>
</table>

Dissimilation may also be unbounded within the word as we have already seen in the Georgian example in (1) with which we opened this chapter.

3 **Dissimilation in the grammar**

One of the fundamental issues in generative phonology has always been whether linguistically significant generalizations should be assigned to particular designated levels of representation, such as the underlying or surface level, or to the rules that map one representation onto another (McCarthy 2007a; Bye 2010). In earlier SPE-style approaches (Chomsky & Halle 1968), dissimilations were described in terms of feature-changing rules of the general form shown in (11).

(11) \( X \rightarrow [-F] / _\_ [+F] \)

Rules of this kind were criticized because the pairing of structural change and environment was arbitrary. Because of this, they were unable to distinguish
between natural assimilations like (12a) and arbitrary rules like (12b) (example from Odden 1987).

(12) a. \([+\text{consonantal}] \rightarrow [+\text{voice}] / _{\_} [+\text{voice}]\) 
   b. \([+\text{consonantal}] \rightarrow [+\text{voice}] / _{\_} [+\text{continuant}]\)

Concerns about the generative power of feature-changing rules thus motivated the development in the mid 1970s and 80s of non-linear approaches to phonological representation (Goldsmith 1976) that permitted greater elegance and simplicity in the statement of natural rules. Assimilation rules were remodelled as feature-filling spreading (see Chapter 85: Local Assimilation and Chapter 80: Long-distance Assimilation of Consonants). In non-linear terms, dissimilation is simply the deletion or delinking of a feature and, in accounts that retain a view of features as binary, independently motivated insertion of a default value (Odden 1987, 1994; Chapter 25: Organization of Features). For example, Chukchi has a process changing underlying /ŋ/ to [ŋ] before another nasal, shown in (13).

(13) taray-ak ‘build a dwelling’ na-taray-mori ‘we built a dwelling’
inawray-ak ‘to give as a gift’ inawray-nin ‘he gave it’
pit?in ‘cold’ pit?iŋ-qiniŋ ‘boy with a cold’

Odden (1987: 242) provides an analysis of this alternation as delinking of [+nasal] before another [+nasal], as shown in (14). Subsequently, redundancy rules fill in the feature [-nasal] by default.

(14) \[
\begin{array}{c}
\text{denasalization} \\
\text{default}
\end{array}
\]

\[
\begin{array}{c}
inawray-\text{ŋ} & \rightarrow & inaw\text{r}K-\text{ŋ} & \rightarrow & inawray-\text{ŋ} \\
[+N][+N] & & [+N] & & [-N][+N]
\end{array}
\]

Accompanying the development of non-linear representations was a return to the idea that at least certain phonological generalizations are best stated as constraints on surface forms. This conception made it possible to explain how it was possible that certain rules seemed to share the same functional teleology (the ‘conspiracy’ problem; see Kisseberth 1970 and Chapter 71: Conspiracies). Such constraints could trigger the application of repairs, such as the deletion of the first of the two [+nasal] features, or block the application of rules that would otherwise apply (see examples of preventive dissimilation in §2). The first such constraint on output representations was the Obligatory Contour Principle (Leben 1973; Goldsmith 1976; McCarthy 1979, 1981, 1986, 1988; Odden 1988; Yip 1988, 1989), one formulation of which is provided in (15).
(15) **Obligatory Contour Principle** (OCP) (McCarthy 1986, 1988)

At the melodic level, adjacent identical elements are prohibited.

The OCP was originally used in accounting for tonal phenomena, especially adjacency of high tones, but it was subsequently extended to include other features. The OCP specifies a negative output target, and dissimilation only represents one strategy for satisfying it. Other repair strategies include merger of adjacent identical nodes, blocking of syncope (McCarthy 1986) and the insertion of epenthetic segments (Yip 1988). The OCP was incorporated into work couched in the framework of Optimality Theory (OT: McCarthy & Prince 1993b; Prince & Smolensky 1993), where it became a violable constraint. Alderete (1997) and Ito & Mester (2003) propose that the OCP may represent a local self-conjunction of more primitive markedness constraints (Smolensky 1995, 1997). OCP\[F\] is violated precisely when \*[F] is violated more than once within some local domain.

Another major theoretical concern during the 1980s especially was locality conditions on the application of rules, and dissimilation played a major part in this debate. The autosegmentalization of representations into tiers permitted the elimination of many kinds of apparent long-distance effects. Sounds that are non-adjacent on the level of the segmental root may nevertheless dissimilate, provided that the relevant features are adjacent on the same autosegmental tier. Steriade (1987) argues that the Latin facts mentioned at the beginning of this chapter may be accounted for by a version of the OCP with jurisdiction over the [lateral] tier, over which interactions between tier-adjacent liquids may be described. The diagrams in (16) show how the liquids in the words *lūnāris* and *flōrālis* are projected onto a separate tier specifying values of [lateral]. This allows us to explain the ungrammaticality of the counterfactual form *lūnālīs* as a result of the two occurrences of [+lateral] being adjacent on the [lateral] tier, in violation of OCP\[lateral\]. In *flōrālis*, on the other hand, there is an intervening [−lateral] between the two occurrences of [+lateral], so the OCP is not violated.

(16) **Lateral dissimilation**

```

<table>
<thead>
<tr>
<th>OCP</th>
<th>*OCP</th>
<th>OCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>[+lat] [-lat]</td>
<td>[+lat]</td>
<td>[+lat] [-lat] [+lat]</td>
</tr>
<tr>
<td>lūn-aris</td>
<td>*lūn-ālis</td>
<td>fōr-ālis</td>
</tr>
</tbody>
</table>
```

Even with the possibility of factoring the representation into tiers, though, there is still an empirical residue that poses a problem for a strict interpretation of locality. In some theories, vocalic place (V-Place) and consonantal place (C-Place) are represented on separate planes (Clements 1990, Clements & Hume 1995, Morén 2003; see also Chapter 16: Vowel Place and Chapter 20: Consonantal Place of Articulation). This organization implies that non-adjacent consonants and vowels should not display any interaction, but this expectation is not borne
out. Akkadian (Soden 1969: 64ff), for example, has a nominalizer prefix {ma-} that dissimilates to {na-} if followed by a labial consonant in the stem, e.g. /ma-sʔal-t-u/ ‘question’ but /ma-rkab-t/ → [na-rkab-t] ‘chariot’. If a labial vowel or glide intervenes between the trigger and the target, however, dissimilation is blocked, e.g. /ma-wmi-t-um/ → *[ma-amii-t-um] ‘oath’. Odden (1994: 319) argues for an additional adjacency parameter, transplanar locality, to cover these cases, but it is unclear how this is to be formalized.

4 Motivations for dissimilation

There are a number of theories of what causes dissimilation. The purpose of this section is to review the major proposals as well as some others of more limited applicability. Our point of departure will be Ohala’s Coarticulation-Hypercorrection Theory (CHT; Ohala 1981, 1993, 2003), which is presented in §4.1. According to the CHT, dissimilation results when the listener reverses a perceived coarticulation. The central prediction of the CHT is that dissimilation should only occur with features that have cues that are significantly extended in time. Other theories assume a processing motivation. Frisch et al. (2004) argue that similarity avoidance effects are due to the difficulties associated with processing the sequencing of similar segments. This bias is reflected in the statistical structure of the lexicon and is described in §4.2. Following on from this, §4.3 considers the possibility that dissimilation in manner between pairs of adjacent fricatives or stops may be understood in terms of the enhancement of place cues. In §4.4 we look at dissimilation-like phenomena in certain kinds of reduplication (‘echo’ reduplication) and language games, which exploit non-identity for aesthetic, ludic or secret purposes.

4.1 Dissimilation as listener reversal of coarticulation

The phonetic realization of certain features may extend over long temporal domains. Long-domain features are interesting because they create an ambiguity for the listener faced with the task of reconstructing the feature’s place in phonological structure. This ambiguity creates conditions favorable to reanalysis which, in the case of temporally extended features, may take one of three forms: assimilation, metathesis, or dissimilation (Blevins 2004). In dissimilation, when one instance of a distinctive feature occurs within the phonetic domain of another instance of the same distinctive feature, there is an ambiguity as to whether the phonetic effects should be ascribed to the first or second instance of the feature, or both. In a series of highly influential publications, Ohala (1981, 1993, 2003) argues that dissimilation as a sound change is the result of reversal by the listener of perceived coarticulation (see Chapter 104: Perceptual Effects). The driving force of the change on this view is the overzealous application of
reconstructive rules with the result that long-domain effects that are actually intended by the speaker become reversed. This is known as hypercorrection. The mechanism of Ohala’s Coarticulation-Hypercorrection Theory is schematized in (17).

(17) *Dissimilation as sound change by the listener* (after Ohala 1981: 187)

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Listener</th>
<th>Listener-turned-Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>/yt/ produced as</td>
<td>/yt/ reconstructed as</td>
<td>[yt] heard as</td>
</tr>
<tr>
<td>[yt]</td>
<td></td>
<td>[ut]</td>
</tr>
</tbody>
</table>

In this example, the speaker intends to say [yt], which is also the form that the listener actually hears. However, the listener is in possession of tacit phonetic knowledge that coronal consonants raise the value of F2 on neighbouring vowels. Drawing on this knowledge, he concludes that the intended quality of the vowel has been distorted due to its proximity to the coronal consonant. The perceived distortion is then eliminated by reconstructing the intended form as /ut/ – the /y/ dissimilates.

There are three important entailments of the CHT. The first follows from the assumption that dissimilation involves coarticulation. Segments are only expected to dissimilate to the extent that they entail overlapping articulations. Many dissimilations involve segments that are not phonologically adjacent on the level of the segmental root node. A well-known example is Grassmann’s Law in Indo-European (Grassmann 1863). In Ancient Greek, which provides one instantiate of the sound law, there cannot be more than one aspirated stop in a pair of adjacent syllables (Smyth 1956 [1920]: 31). Thus, earlier /tʰrikʰ-os/ ‘hair (GEN SG)’ became [trikʰos] (cf. [tʰriks] (NOM SG)). Grassmann’s Law apparently represents an interaction between two non-adjacent consonants. Once we take into account the coarticulatory effect of the aspiration on the following vowel, the apparent action-at-a-distance effect evaporates because the aspiration overlaps phonetically with the dissimilation target. Following release of the stop closure, aspiration persists into the following vowel for 60 ms or so, presenting the listener with an ambiguity as to whether the aspiration represents post-aspiration of the first stop or pre-aspiration of the second. Segments that are outside of each other’s coarticulatory range are not expected to dissimilate according to the CHT.

The second consequence of the CHT is that dissimilation cannot take the form of a quantitative change within the same category. Dissimilation should always be limited to phonologically contrastive features (cf. Grammont 1895, Kiparsky 2003). This follows directly from the assumption that what listeners are doing, when they hypercorrect, is reconstructing what they believe is the intended form,
which must be a distinctive segment of the language. Assimilative changes, on the other hand, may give rise to novel structures or segments.

The third consequence of the CHT is that it shouldn’t matter which direction the perceived distortion is resolved. The CHT is neutral with respect to whether the dissimilation is progressive or regressive. In (18), an equally valid outcome would have been dissimilation of the consonant, e.g., to /yk/.

The empirical substance of Ohala’s proposal consists of the following predictions.

(18) **Ohala's predictions**

a. The likelihood that a given consonantal feature participates in dissimilation depends on whether the associated perceptual cues have a short or long domain.

b. The domain of dissimilation should be linked to the temporal extension of the perceptual cues.

c. Features whose cues are localized on the segment should not show dissimilatory behavior.

On this basis, an up-to-date list of the features shown to have temporal extension, and are therefore likely to dissipilate according to the CHT, is shown in Table 2, adapted from a corresponding table in a paper on the evolution of metathesis by Blevins & Garrett (2004: 123). Examples are incorporated from the surrounding discussion in their text.
<table>
<thead>
<tr>
<th>Feature</th>
<th>Acoustic property</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>rounding</td>
<td>lowering of all formants (LM 356–358)</td>
<td>French, English (Benguere &amp; Cowan 1974; Eubker &amp; Gay 1982)</td>
</tr>
<tr>
<td>velarization</td>
<td>lowered F2 (LM 361–362)</td>
<td>Arabic (Ghazali 1977; Card 1979)</td>
</tr>
<tr>
<td>laryngealization</td>
<td>more energy in F1, F2, more jitter (LMJ)</td>
<td>Cayuga (Dougherty 1993)</td>
</tr>
<tr>
<td>aspiration</td>
<td>more energy in F0, more noise (LMJ)</td>
<td>Cayuga (Dougherty 1993)</td>
</tr>
<tr>
<td>nasalization</td>
<td>spectral zero, nasal anti-resonance (LM 116)</td>
<td>English (Cohn 1990)</td>
</tr>
<tr>
<td>jaw lowering</td>
<td>raised F1</td>
<td>English (Amerman et al. 1970)</td>
</tr>
<tr>
<td>rhoticity</td>
<td>lowered F3 (LM 244, 313)</td>
<td>English (Kelly &amp; Local 1986; Kelly 1989, Tunley 1999; West 1999a, b, 2000; Hawkins &amp; Smith 2001)</td>
</tr>
</tbody>
</table>

Table 2

Temporally extended features. References to acoustic properties are from Ladefoged (1993; L), Ladefoged et al. (1988; LMJ) and Ladefoged & Maddieson (1996; LM).

Features not likely to dissimilate according to the CHT are fricative, affricate, stop and voice. The phonetic cues for each of these segment types are localized on the segment itself. For example, stops are cued by high amplitude bursts on release of the closure. These bursts are very short, of the order of 5 to 10 ms. The temporal extent of voicing and fricative noise are limited by the extent of the segment’s articulation phase. Examples of continuancy and voicing dissimilation nevertheless exist. Examples of continuancy dissimilation are discussed in §4.3 along with a possible phonetic motivation. When Ohala (1981) initially framed his CHT, the existence of liquid dissimilation appeared to present a problem,
since at that time no work had been done on temporally extended cues for liquids. Far from being occasional, liquids are, after labials, the most likely to dissimilate. Moreover, they show pronounced action-at-a-distance, as the Georgian example at the beginning of this chapter shows. This is surprising if it is all down to the formant transitions onto neighbouring vowels. Starting with Kelly & Local (1986) and Kelly (1989), however, much research has shown that liquids have temporally extended acoustic-perceptual cues. Tunley (1999) demonstrated experimentally that /l/ causes raising in $F_2$ and $F_3$ on neighbouring high vowels, while /r/ results in lowering. These effects are moreover observable up to five syllables away from the lateral segment itself (Hawkins & Smith 2001; see also Chapter 28: Rhotics). West (1999b) found that when the liquid and its phonetic context were masked with white noise, speakers were nonetheless able to reconstruct the intended liquid from the resonances in vowels up to three syllable nuclei away. These recent findings on the phonetics of liquids thus square well with the prediction that the phonological domain of the dissimilating feature should mirror the temporal extension of the corresponding cues.

Ohala does not consider dissimilation between vowels. Öhman (1966) showed that vowels may coarticulate across intervening consonants. Dissimilation of vowels across syllables is thus consistent with Ohala’s broader claims. Interestingly, though, all of the known examples of vowel dissimilation involve vowel height (Chapter 19: Vowel Height). Vowel height dissimilation is certainly consistent with the experimental finding that lowering of the jaw coarticulates (Amerman et al. 1970), but the existence of coarticulation is apparently not a sufficient predictor of dissimilation. Indeed there is a striking complementarity of phonological patterning between vowel height on the one hand and vowel colour (roundness and backness) on the other. To date, no examples of dissimilation involving the labial or front–back dimensions have come to light. Conversely, systems of vowel harmony in which backness or rounding (or both) are active are richly attested in the literature, but the feature [low] is not frequent in vowel harmony (see Krause 1979 for a possible example from Chukchi). Further discussion of this problem may be found in Alderete & Frisch (2007).

There is also still a residue of dissimilatory patterns for which the CHT does not seem to offer an explanation, including NC, long vowel, continuancy (see §4.3 below) and voicing. In the next section we will consider an alternative theory of the origins of dissimilation that does not seem to make any prediction about which features participate.

4.2 Similarity avoidance in the lexicon

Several recent studies have examined statistical asymmetries in the lexicon pointing to a preference for phonetic dissimilarity between neighbouring consonants in roots (see also Chapter 90: Morpheme Structure Constraints).
Berkley (2000) studied English monosyllabic words and found evidence of gradient similarity avoidance effects. Focusing on words of the shape C₁VC₂, she found that there are significantly fewer such words containing homorganic consonants than would be expected if consonants combined randomly, i.e. had the same probability of occurring as two independent events. Under- or overrepresentation is the ratio of observed to expected frequency (see Chapter 000: Frequency Effects). A pair is underrepresented if the observed-to-expected (or O/E) ratio is less than 1, overrepresented if greater than 1. Words in which C₁ and C₂ are homorganic, such as mop, lull and king, are underrepresented in the English lexicon. For CVVC words with a long vowel intervening between C₁ and C₂, the homorganic similarity avoidance effect is also present but weaker. These results, adapted from Berkley (2000), are shown in Table 3. Shaded cells indicate underrepresented combinations.

<table>
<thead>
<tr>
<th></th>
<th>Labial p b f v m w</th>
<th>Cor obs t d ð s z ŋ ʤ ʤ</th>
<th>Cor son n l r j</th>
<th>Dorso-guttural k g h ŋ w</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labial</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cor obs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cor son</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dorso-guttural</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>p b f v m w</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>t d ð s z ŋ ʤ ʤ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n l r j</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>k g h ŋ w</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVVC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labial</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cor obs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cor son</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dorso-guttural</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>p b f v m w</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>t d ð s z ŋ ʤ ʤ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n l r j</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>k g h ŋ w</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3
Similarity avoidance in English monosyllabic roots.

Frisch et al. (2004) studied similarity avoidance in the lexicon of Arabic triradical verb roots. They found a very strong effect for adjacent pairs of consonants (C₁ and C₂, C₂ and C₃), tending to categorical, as shown in Table 4. For non-adjacent C₁ and C₃ the effect was still strong, although somewhat weaker. Under both adjacency and non-adjacency the similarity avoidance effect is far stronger than the one observed by Berkley for English. Grey cells are homorganic in terms of major class (Labial, Coronal obstruent, Dorsal, Guttural, Coronal sonorant). They also found that the avoidance was stronger the more similar the consonant. Within the major class of coronals, for example, an adjacent pair of coronals was significantly more frequent if they had different values for [continuant].
Table 4
Similarity avoidance in Arabic verb roots.

Frisch et al. argue that when observed co-occurrence deviates from expected co-occurrence, the learner posits a gradient phonological constraint, which they dub the gradient Obligatory Contour Principle that encodes the generalization ‘roots with repeated homorganic consonants are unusual’. Statistical generalizations like these form the basis of metalinguistic judgments of relative acceptability of novel words (‘word-likeness’), influencing which words are actually used, and the phonological forms of novel and borrowed words (cf. Frisch 2004: 346).

For Frisch et al., the gradient OCP represents a statistical generalization over a static lexicon; it does not encode tacit phonetic knowledge directly. Despite this, Frisch et al. do propose a functional explanation for the distributional asymmetries in the lexicon. Repetition of similar consonants is difficult to process (Frisch 2004). This finds the beginnings of an explanation in neural network models that encode linearization of segments. Nodes in the network must be excited and inhibited so as to fire in the right sequence. If there is a sequence of similar segments, the periods of excitation and inhibition may overlap, whether or not there is a corresponding overlap in the acoustic signal. Given two segments, $C_1$ and $C_2$ in linear sequence that activate the same distinctive feature node, if the node encoding $C_1$ is still firing when $C_2$ is perceived, this may result in simultaneous perception of $C_1$ and $C_2$. The resulting...
blend of the two percepts may result in the same kind of ambiguity that results from coarticulation in the CHT, and is presumably consistent with the same re-analytic strategies. An alternative source of dissimilation in processing may be a refractory period during which the node must be reset in order to detect a second stimulus of the same type. Unlike the CHT and the blending scenario we have just sketched, the refractory period would seem to predict asymmetries in the direction of the resulting pattern. If C₂ occurs within this refractory period of a node that has just fired for C₁, the relevant feature will be perceived on C₁ but may not be perceived on C₂. The effective result is progressive dissimilation.

This processing bias may further help explain the pronounced difference in the strength of the effect in English and Arabic. Arabic has non-concatenative morphology and psychologically real abstract consonant roots like /ktb/ ‘write’. In phonological analysis, this has motivated analyses in which consonants and vowels occupy separate tiers in the representation. Roots are vulnerable to speech errors involving misordering or radical consonants.

These functional mechanisms and their implications for linguistic patterning provide much fertile ground for further research. First, a greater range of languages must be studied to determine to what extent root co-occurrence constraints have a gradient character or not. Suzuki (1998) presents 16 examples of root co-occurrence restriction, which are summarized in Table 5, along with a couple of additional cases.
### Chapter 63  Bye: Dissimilation

<table>
<thead>
<tr>
<th>Feature</th>
<th>Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>coronal</td>
<td>Akan (Welmers 1946; McCarthy &amp; Prince 1995)</td>
</tr>
<tr>
<td>pharyngeal</td>
<td>Moses-Columbia Salish (Czaykowska-Higgins 1993)</td>
</tr>
<tr>
<td>liquid</td>
<td>Javanese (Uhlenbeck 1949; Mester 1986)</td>
</tr>
<tr>
<td>rhotic</td>
<td>American English (Hall 2009)</td>
</tr>
<tr>
<td>voice</td>
<td>Japanese (İto &amp; Mester 1986; Steriade 1987, 1995; Ishihara 1991; Archangeli &amp; Pulleyblank 1994; Alderete 1997; Pater 1999; İto &amp; Mester 2003), Bakairi (Gussenhoven &amp; Jacobs 2005)</td>
</tr>
<tr>
<td>high</td>
<td>Ngbaka (Thomas 1963; Chomsky &amp; Halle 1968; Mester 1986)</td>
</tr>
<tr>
<td>back</td>
<td>Ainu (İto 1984; Mester 1986; Archangeli &amp; Pulleyblank 1994), Tzeltal (Slocum 1948; İto 1984)</td>
</tr>
<tr>
<td>length</td>
<td>Japanese</td>
</tr>
</tbody>
</table>

**Table 5**

Root co-occurrence restrictions.

A second challenge concerns the difference between similarity and identity. Arabic shows avoidance of identical radicals. In English, however, segmental identity provides an escape hatch to the OCP. CVC roots where both C₁ and C₂ are labial are generally dispreferred, but not if C₁ and C₂ are identical. For example, selecting /p/ for C₁ and C₂ and permuting the possible nuclei, almost every cell of the paradigm corresponds to an actually occurring word of English: *pip, pep, pap, pop, püp, peep, poop, parp, pipe, Pape, pope*. See Idsardi & Rainy (2008) for a relevant proposal that segmental identity may be represented in a data structure they call a ‘linked list’.

Finally, the similarity avoidance approach raises anew the question of which features are expected to participate in dissimilation. Are certain features associated with longer periods of excitation in perception than others? And if that turns out to be so, is there a systematic correlation between the length of a feature’s temporal domain in the speech signal and the duration of excitation? To date, place and laryngeal features (MacEachern 1997) have been studied.
These studies must therefore be extended to short-domain features, such as stops, fricatives and voicing.

### 4.3 Dissimilation and cue robustness

Manner dissimilation is predicted not to occur by the CHT. Despite this, a small number of languages display dissimilation of pairs of adjacent stops or fricatives. For example, Osage (Quintero 2004), a Siouan language spoken in Oklahoma, has a rule dissimilating /d/ to [t] following /s/, e.g. /ʃkoʃa/ → [ʃkoʃa] ‘you want’. Tsou (Szakos 1994), an Austronesian language of Taiwan, has a rule that hardens /h/ to [k] following /s/, giving alternations such as [s-in-uhn] ‘send someone to do something (ACTOR VOICE)’ ~ [skuna] (PATIENT VOICE), [s-m-hpici] ‘pinch (ACTOR VOICE)’ ~ [skopica] (PATIENT VOICE). Non-sibilant fricatives such as [θ x] have diffuse spectra. Harris (1958) shows that the F2 transition is required for reliable identification of the fricative. In a cluster of fricatives, one of the transitions, C-V or V-C, is missing. Dissimilating one of the fricatives to the corresponding stop has the effect of sharpening the F2 transition and adding a stop release burst, rendering the place of articulation more easily identifiable. In Chontal (Waterhouse 1949, 1962; Kenstowicz & Kisseberth 1979), a Hokan language of Mexico, the imperative suffix is {-la?} after voiceless segments, and {-la?} after voiced ones, e.g. [fuf-la?] ‘blow it!’, [panx-la?] ‘sit down!’’, [ko-la?] ‘say it!’, [kan-la?] ‘leave it!’. The pattern seems to involve deleting the second [spread glottis] feature in a cluster of voiceless fricatives (assuming the claim of Vaux 1998 that voiceless fricatives are universally [spread glottis]), allowing the lateral to be more clearly identified as such.

Dissimilation between two stops is far more rare, but Gonzalez (2008) supplies an example from North-Central Spanish, which shows dissimilation of coda /k/ to [θ] (and other realizations) before another stop (generally /t/, e.g. [doθ'lor] ‘doctor’. Gonzalez also proposes an explanation in terms of cue robustness, noting that the cues for the first stop are not as salient before another stop as before other segments, due to weaker, or absent, stop release burst and formant transitions. Similar considerations have been argued to condition metathesis in other languages, e.g. Faroese, where final /skt/ metathesizes to [kst] (Hume & Seo 2004; see Chapter 31: Metathesis).

### 4.4 The dissimilation game

In a different vein, people also apply tacit knowledge of similarity to a variety of ludic and poetic ends. Indeed, the term ‘dissimilation’ entered the field in the 19th century from rhetoric, where it had been in use to describe the variation in style required for good public speaking (cf. Brugmann 1909). The criterion of a perfect rhyme in English, such as pet – bet, is not only that the material following the onset of each stressed syllable is identical, but that the onset of each stressed
syllable is different. In considering rhyme in English, we do not appear to count features; we are merely interested in contrastive segments. The pair pet – bet is thus as good a rhyme as the pair pet – set. The same requirement of non-identity turns up in echo reduplication (Alderete et al. 1999; Nevins 2005; Chapter 106: Reduplication), where the base is reduplicated with an onset determined by convention (fixed segmentism). In Hindi, this kind of reduplication gives a meaning ‘X and the like’ (Singh 1969, Nevins 2005). The fixed segment is /v/ unless the base also begins with a /v/, in which case the echo reduplicant begins with /ʃ/. Examples from Nevins (2005: 280) are shown in (19).\(^4\)

(19) Hindi echo reduplication with fixed segmentism

\[
\begin{align*}
\text{puanii-vaani} & \quad \text{‘water and the like’} \\
\text{aam-vaam} & \quad \text{‘mangoes and the like’} \\
\text{tras-vas} & \quad \text{‘grief and the like’} \\
\text{yaar-vaar} & \quad \text{‘friends and the like’} \\
\text{vakil-fakil, *vakil-vakil} & \quad \text{‘lawyers and the like’}
\end{align*}
\]

Similar facts are observed in English slm- reduplication, e.g. potato-shmotato, but shmallt-zhphaltz (Nevins & Vaux 2003), Kannada (Lidz 2001) and Javanese (Yip 1995). Yip (1995, 1998) proposes that these are due to a constraint against the repetition of identical elements, *REPEAT, ultimately due to Menn & MacWhinney (1984). Similar facts also turn up in secret languages. In the Kunshan secret language Mo-pa (Yip 1982: 652ff), a base of the shape \(C_1V_1(C_2)\) is mapped to a template \(C_1[\text{o}]G V_1(C_2)\), where \(G\) is a consonant whose value for the feature [continuant] is the opposite of that of \(C_1\). Examples, not glossed in the source, are given in (23).

(23) Kunshan secret language Mo-pa

\[
\begin{align*}
\text{taw} & \quad \text{to law} \\
\text{k’ε} & \quad \text{k’o fie} \\
\text{d’oŋ} & \quad \text{d’o loŋ} \\
\text{tsa} & \quad \text{tsa za} \\
\text{vā} & \quad \text{vo pā} \\
\text{sja} & \quad \text{so tsja} \\
\text{naw} & \quad \text{no tsja} \\
\text{nian} & \quad \text{ja tɕan}
\end{align*}
\]

Oral stops are replaced by voiced continuants, while nasals and continuants are replaced by the corresponding voiceless unaspirated stop. This continuant dissimilation is covered neither by the CHT nor cue robustness – the reason for the alternation seems to be purely ludic.
Chapter 63  Bye: Dissimilation  21

5 Conclusions

There are a number of theories of the origin of dissimilation, and dissimilation may apparently have one of several motivations. According to the Coarticulation-Hypercorrection Theory (Ohala 1981, 1993, 2003), dissimilation results when the listener reverses a perceived coarticulation. The central prediction of the CHT is that dissimilation should only occur with features that have elongated cues. Other theories assume a functional motivation. Frisch et al. (2004) argue that similarity avoidance effects are due to the difficulties associated with processing the sequencing of similar segments. This bias is reflected in the statistical structure of the lexicon in many languages. However, the predictions of processing-based accounts with respect to the observed featural asymmetries are not yet clear. It was suggested here that manner dissimilation in pairs of adjacent fricatives or stops is best understood as maximizing cues for place of articulation, while dissimilatory phenomena in language games fulfill an aesthetic role. Future research will hopefully extend the empirical base for the study of dissimilation phenomena, and determine more precisely what the division of labour and synergies between the factors discussed here should be.

REFERENCES


Chapter 63  Bye: Dissimilation


Smolensky, Paul. 1995. On the structure of the constraint component Con of UG. (ROA-86.)


Woodhouse, Robert. 1998. Verner’s and Thurneysen’s Laws in Gothic as evidence for obstruent development in Early Germanic. *Beiträge zur Geschichte der deutschen Sprache und Literatur* 120. 194–222.


Chapter 63  Bye: Dissimilation

NOTES

* I would like to thank Beth Hume, Marc van Oostendorp and two anonymous reviewers for helpful feedback on this chapter.

1 For example, Suzuki’s cases 54–57 are grouped under ‘polarity’, but on closer inspection they appear to have little in common. The reasons for reclassifying or not including these cases here are, briefly, as follows. In Russian jakane’ (54) a pretonic non-high vowel reduces to [i] or [a], depending on the quality of the following stressed vowel. The high or low quality of the reduced vowel gives the impression of maximizing the contrast in vowel height, e.g. /sẽ/mju/ → [s’õ/mju] ‘seven (INST)’, but /dõ/satka/ → /dõ/satka/ ‘tenfold’. Crosswhite (1999: 79–83), however, argues that the dissimilatory effect is only epiphenomenal, and actually has nothing to do with dissimilation or enhancement of vowel height contrast. Based on work by Alderete (1995), she argues that what is at issue is actually a difference in foot structure. Syllables with prominent nuclei may constitute feet on their own. In [dõ(õa t)ka], the stressed syllable forms a foot on its own, whereas in [(s’õ/m]u] the pretonic syllable must also be incorporated because the stressed nucleus is not sufficiently prominent. The choice of raising or lowering thus comes to depend on whether the focus is parsed into a foot or not. Dinka (55) represents a morphological exchange rule, which is highly controversial in linguistic theory. See Wolf (2007) for an alternative analysis of exchange rules in terms of featural affix allomorphs. Huamelultec Chontal (56) appears to be a case of [spread glottis] dissimilation, not polarity. Margi (57) represents a case of allomorphy. Also not included is Thurneysen’s Law in Gothic, which recent research by Woodhouse (1998) shows to be a case of analogical relexicalization rather than a phonological rule. Suzuki also includes Finnish consonant gradation (Keyser & Kiparsky 1984, Alderete 1997), but it is excluded here, since it is neither synchronically properly phonological nor obviously a dissimilation rule. One language cited as evincing low vowel dissimilation is the Chadic language Kera (Ebert 1974, Kenstowicz & Kisseberth 1979), where /a/ is claimed to dissimilate to [a] preceding another /a/. Recent work by Pearce (2008), however, shows that the effect is due to reduction in unstressed syllables.

2 This consensus naturally does not extend to those representational theories like Government Phonology, where the elements of representation must have autonomous interpretations (see especially Kaye et al. 1985). Obviously, [sonorant] has no phonetic interpretation independent of the place and manner features with which it is associated.

3 One of the apparent cases of continuant assimilation mentioned by Ohala as a potential counterexample to the CHT may in fact turn out to be best understood as an instance of it. Dyen (1972) shows that Proto-Austronesian */s...s.../ was dissimilated across an intervening vowel in Ngaju-Dayak to /t...s.../. The evidence, however, only consists of the two words PA "sisik > ND [tisik] ‘fish-scale’ and PA "susu > ND [tuso] ‘breast’. It is perhaps relevant that the vowel immediately following the initial " is a high vowel. High vowels are known to increase the degree of post-aspiration of a preceding voiceless stop and affrication of a preceding /t/. The initial sibilant may thus have been interpreted as the coarticulatory affrication of an intended /t/.
The forms in (19) represent Nevins’ own fieldwork. The original source on Hindi echo words is Singh (1969).