1 *Introduction*

1.1 Introduction

1.1.1 The core idea: dissimilation from surface correspondence

Agreement By Correspondence is a theory of agreement developed in work by Walker (2000a, 2000b, 2001), Hansson (2001/2010, 2007), and especially Rose and Walker (2004). The initial aim of this work was to explain long-distance *consonant harmony*: agreement between non-adjacent consonants, which is not mediated by other phonological material which intervenes between them. In the Agreement By Correspondence framework, the basis for this agreement is *surface correspondence*: a correspondence relationship between the different surface consonants of a single output form. The arrangement and structure of this correspondence affects the input–output mapping because there are constraints that take them into consideration when assessing violations.

The central point of this book is that surface correspondence also gives rise to dissimilation, in a novel way: dissimilation is not the avoidance of similarity for its own sake, but rather a response to more stringent conditions attached to similarity. The term 'dissimilation' is used here to refer to situations where surface consonants obligatorily disagree in some respect. This encompasses a range of dissimilatory effects, as previous work observes (Yip 1988; Suzuki 1998; among others). Dissimilation can manifest as processes that change similar input segments such that they are less similar in the output. It can also manifest as a choice between segments or allomorphs based on disagreement on the surface, or it can emerge in the form of static co-occurrence restrictions that prohibit similar segments without necessarily giving rise to overt alternations. Any of these could be the result of a principle of disagreement in the output, so I will consider all these types of dissimilatory effects.

The Agreement By Correspondence theory leads to dissimilation because surface correspondence is based on phonological similarity. Constraints of the

CORR-[αF] family evaluate every pair of output consonants; they require that pairs of consonants which share a specified feature be in correspondence with each other. These constraints are therefore satisfied in two essential ways.

(1) Two structural types of CORR constraint satisfaction
  a. Similar consonants that correspond
  b. Dissimilar consonants, whether they correspond or not

Agreement By Correspondence builds on the former (1a). Harmonizing consonants are required to correspond because they are similar in some respect. Because they correspond, they are compelled to agree in another respect, by CC·IDENT-[F] constraints that require correspondents to agree with each other. This need for agreement is the basis for assimilation. Consonant harmony represents agreement rooted in similarity rather than proximity, thus deriving its long-distance character.

Dissimilation builds on the other way of satisfying CORR constraints: instead of becoming better correspondents, dissimilating consonants avoid corresponding in the first place, by being dissimilar. Consonants are only ever required to correspond because they are similar in some respect – because they share some feature. If they do not share that feature, correspondence between them is not necessary. Dissimilation removes the similarity between consonants, which renders them outside the scope of the correspondence requirement. This satisfies CORR constraints, because consonants that are not similar are not obliged to correspond. It also satisfies constraints that impose restrictions on correspondence – *CC·Limiter constraints*: consonants that do not correspond are not subject to such restrictions.

Since correspondence demands are satisfied by dissimilar consonants that do not correspond, the theory of surface correspondence is by its very nature a theory of dissimilation as well as harmony – whether intended as such or not. In this book, I further develop the theory of surface correspondence, and study its consequences for dissimilation and the relationship between dissimilation and consonant harmony. I propose that long-distance dissimilation and long-distance consonant harmony are two phenomena generated by the same surface correspondence relation: they arise from different rankings of the same set of constraints. The Surface Correspondence Theory of Dissimilation is applied in detail to analyses of harmony and/or dissimilation patterns in Chol, Georgian, Kinyarwanda, Latin, Obolo, Ponapean, Quechua, Sundanese, Yidiny, and Zulu. I also examine its typological predictions, evaluated against a survey of 154 dissimilation patterns, from 134 languages.

1.1.2 How it works

For a simple example of the kind of interactions that can result from the surface correspondence theory, consider a hypothetical input /bap/. This input has two consonants that share the feature [Labial]. Based on this shared feature, correspondence can be required between these consonants, by a constraint like CORR·[Labial] (2). The consonants /b/ and /p/ also differ in the feature [±voice]. Correspondent consonants may be required to agree in voicing, by a constraint CC·IDENT-[voice] (3), so this disparity sets up the potential for an interaction between these consonants – either harmony or dissimilation. Both constraints have an implicational structure; this means they can be satisfied either by fulfilling both clauses, or by falsifying the first clause.

(2) CORR·[Labial]: 'if consonants are labial, they are in surface correspondence'

(3) CC·IDENT-[voice]: 'if consonants correspond, they agree in voicing'

The space of possible optima can be broken down into classes, based on these two features and the possibility of correspondence between the two consonants. These possibilities are illustrated in the table in (4). Matching indices in the outputs mark correspondences, shown in partition notation in the second column. The third column indicates whether the candidates are faithful, or involve an unfaithful mapping. (The shaded rows represent candidates which can never win – they are harmonically bounded by (a)–(d).)

(4) Simple example: correspondence-related mapping possibilities. Input: /bap/

	Output	SCorr classes	I-O Faithful?	Type of mapping
a.	b_1ap_1	{b p}	F-lab, F-voi	Faithful with correspondence
b.	b_1ap_2	{b}{p}	F-lab, F-voi	Faithful with non-correspondence
c.	b_1ab_1	{b b}	F-lab, UnF-voi	Harmony and correspondence
d.	b_1ak_2	{b}{k}	UnF-lab, F-voi	Dissimilation and non-correspondence
e.	b_1ab_2	{b}{b}	UnF-lab, UnF-voi	Harmony with non-correspondence
f.	b_1ak_1	{b k}	UnF-lab, UnF-voi	Dissimilation with correspondence

One possibility (4a) is that the two consonants are faithful, and are in correspondence with each other. This correspondence is favored by a CORR constraint,

because [b] and [p] are similar with respect to place of articulation – they share the feature [Labial]. However, having correspondence between [b] and [p] also means having two corresponding consonants which disagree in voicing – a situation that would be problematic in a language with voicing harmony, where correspondence is attached to a requirement for voicing agreement.

Another possibility (4b) is that /b/ and /p/ surface faithfully, but do not correspond with each other. This non-correspondence is problematic because the consonants are similar: having two labials that fail to correspond violates the CORR constraint that refers to [Labial]. But, this option does circumvent the agreement problem of (4a): if the two labials do not correspond, then it does not matter whether they agree or not.

In order for surface correspondence to drive alternations, the fully faithful candidates (4a) and (4b) must both get ruled out. The faithful non-correspondent candidate (4b) can be ruled out by a constraint that demands correspondence, such as CORR·[Labial]. The faithful candidate *with* correspondence (4a) can be ruled out by a constraint that imposes some requirement on correspondents, like CC·IDENT-[voice].

If both faithful candidates are ruled out, then /bap/ can map to an *un*faithful candidate – one with better surface correspondence opportunities. These candidates split into two general types: one class, represented in (4c), are harmonizing candidates; the other, shown in (4d), are dissimilating candidates.

The harmonizing candidate in (4c), [b_1ab_1], is like the faithful correspondent candidate in (4a) in having correspondence between both labials. It differs from (4a) in the voicing of one consonant: /p/ surfaces as [b], assimilating to match the voicing of the [b]. Agreement in this way satisfies the CORR constraint by having correspondence, and it satisfies the CC·IDENT constraint in this example by changing the consonants to make them an acceptable pair of correspondents – a pair that does not disagree like (4a). This is the Agreement by Correspondence interaction, developed in detail in previous work by Rose and Walker (2004), and Hansson (2001/2010).

The fourth possible outcome is the unfaithful *non*-correspondent candidate in (4d), [b_1ak_2], which does labial dissimilation. This candidate is like the faithful non-correspondent one, [b_1ap_2], in (4b) in having two output consonants which do not correspond. But [b_1ak_2] differs from [b_1ap_2] in the similarity of these two non-corresponding consonants. In [b_1ak_2], one labial changes to a non-labial: /p/ surfaces as [k]. This dissimilation satisfies the CORR constraint *through non-correspondence*, because this non-correspondence is between *dissimilar* consonants. A constraint like CORR·[Labial], which says 'labials must correspond'

does not require [k] to correspond with [b], because [k] is not labial. Since the [b] and [k] do not correspond, it is not a problem that they disagree in voicing; CC·IDENT-[voice] only requires that agreement between correspondents. So, like [b_1ap_2] (4b), the dissimilating [b_1ak_2] satisfies the agreement requirement by not having correspondence – but by dissimilating, it does so without also violating the requirement that labials correspond with one another.

Finally, the shaded candidates in (4) are harmonically bounded: they are possible candidates, but not possible optima. In (4e), [b_1ab_2], /p/ assimilates to match the voicing of the other labial /b/, even though they do not correspond. This is spurious harmony: it is agreement between non-correspondents, which are not required to agree. It incurs the same faithfulness violations as the harmonizing candidate (c), plus the same CORR constraint violations as the faithful non-correspondent candidate (b). The candidate in (4f), [b_1ak_1], shows spurious dissimilation: labial /p/ dissimilates to a non-labial [k], which is not required to correspond with [b], but they correspond anyway. This has the same unfaithfulness as the regular dissimilating candidate (d), as well as the voicing disagreement problem in the faithful, correspondent candidate (4a).

The tableaux in (5)–(6) demonstrate how the two unfaithful candidates emerge as possible optima. The ranking in (5) produces assimilation: the winning candidate (c) is unfaithful in a way that allows for two agreeing and corresponding labials in the output. The ranking in (6) produces dissimilation instead: it has an unfaithful mapping that leaves just one labial in the output, meaning the disagreeing consonants do not need to correspond to satisfy CORR·[Labial].

(5) CORR·[Labial] and CC·IDENT-[voice] favor assimilation

	Output	SCorr classes	CORR. [Labial]	CC·IDENT-[voice]	IDENT-[Labial]	IDENT-[voice]	Remarks
a.	b_1ap_1	{b p}		*!			faithful, corr.
b.	b_1ap_2	{b}{p}	*!				faithful, non-corr.
☞ c.	b_1ab_1	{b b}				*	harm, corr.
d.	b_1ak_2	{b}{k}			*!		dissim, non-corr.
e.	b_1ab_2	{b}{b}	*!			*	harm, non-corr.
f.	b_1ak_1	{b k}		*!	*		dissim, corr.

(6) CORR·[Labial] and CC·IDENT-[voice] favor dissimilation

	Output	SCorr classes	CORR. [Labial]	CC· IDENT-[voice]	IDENT-[voice]	IDENT-[Labial]	Remarks
a.	b_1ap_1	{b p}		*!			faithful, corr.
b.	b_1ap_2	{b}{p}	*!				faithful, non-corr.
c.	b_1ab_1	{b b}			*!		harm, corr.
☞ d.	b_1ak_2	{b}{k}				*	dissim, non-corr.
e.	b_1ab_2	{b}{b}	*!		*		harm, non-corr.
f.	b_1ak_1	{b k}		*!		*	dissim, corr.

The difference between these two rankings is just in the faithfulness constraints. In both cases, the surface correspondence constraints serve the same function, of eliminating the two fully faithful correspondence possibilities (a)–(b); they do not decide between the two different types of unfaithful candidates (c)–(d). What this means is that the combination of CORR·[Labial] and CC·IDENT-[voice] constraints favors *either* voicing harmony among labials, *or labial dissimilation* between consonants that disagree in voicing.

The role of disagreement in provoking dissimilation in this example is an artifact of the CC·Limiter constraint shown here. CC·IDENT constraints limit correspondence based on agreement: they prohibit correspondence between disagreeing consonants. Other CC·Limiter constraints which are not defined in terms of agreement do not carry this same condition, and prefer dissimilation more directly. For example, the CC·EDGE-(Root) constraint in (7) restricts correspondence based on morphological structure. This can produce dissimilation even between identical consonants, as long as they are not in the same root (8).

(7) CC·EDGE-(Root): 'if two consonants correspond, they are both in the root'

(8) CC·EDGE constraints favor dissimilation irrespective of agreement

	Input: /ba-b/		CORR· [Labial]	CC· EDGE-(Root)	IDENT-[voice]	IDENT-[Labial]	Remarks
a.	$b_1a\text{-}b_1$	{b b}		*!			faithful, corr.
b.	$b_1a\text{-}b_2$	{b}{b}	*!				faithful, non-corr.
☞ c.	$b_1a\text{-}g_2$	{b}{g}				*	dissim, non-corr.

So, the interaction of constraints that *require* correspondence, and constraints that *limit* correspondence, can spur unfaithful mappings for inputs with similar consonants. If correspondence is both required and prohibited, it can be optimal to adjust the consonants in order to improve their surface correspondence. When such adjustments occur, they fall into two conceivable classes: harmony, and dissimilation. These two kinds of unfaithful mappings go hand in hand with different types of surface correspondence structures. Harmony alternations are familiar from previous work on Agreement By Correspondence: consonants that are similar in one respect end up assimilating in another – they agree in order to become better correspondents. Dissimilation is less intuitively obvious, but just as possible in the theory. Correspondence is demanded on the basis of similarity: only *similar* consonants are required to correspond. This means that restricting or penalizing correspondence favors dissimilarity. Instead of corresponding, consonants can dissimilate so that correspondence between them is no longer demanded.

The dissimilating candidates, and the dissimilatory type of mapping, is the primary focus of this book. The idea is that dissimilation occurs to avoid penalized correspondence: similar consonants dissimilate because they are required to correspond on the one hand, and also prohibited from corresponding on the other. This approach links dissimilation to harmony in a way that leads to new specific and testable predictions. Since dissimilation and harmony are based on the same surface correspondence mechanism, the constraints that operate on that correspondence are active in both phenomena. This means that constraints that require or prohibit correspondence can be assessed based on consonant harmony as well as dissimilation – the theory makes predictions that can be tested outside of dissimilation. It also follows that dissimilation can happen over distance, like harmony. Both patterns are driven by surface correspondence, and correspondence is required on the basis of similarity, rather than linear adjacency.

1.2 Correspondence-driven dissimilation in action

To see how the dissimilation from correspondence interaction extends to analyses of actual dissimilation cases, let's consider one. Cuzco Quechua exhibits a form of glottalization dissimilation, in which a glottal stop dissimilates to [h] in the presence of a glottalized consonant (Parker and Weber 1996; Parker 1997; see Chapter 5 for full analysis). One manifestation of this dissimilation is an alternation between epenthetic glottal stops and epenthetic [h], based on disagreement with an ejective – a dissimilatory ban on the co-occurrence of two glottalized consonants. This alternation is schematized in (9) and exemplified in (10).

(9) Cuzco Quechua glottalization dissimilation, schematized:
a. V…T → ʔV…T (epenthesis of initial [ʔ] when no ejectives present)
b. V…K' → hV…K' (dissimilatory use of [h] instead of [ʔ] with ejectives)

(10) Cuzco Quechua: [ʔ]~[h] glottalization dissimilation (Parker and Weber 1996):
a. /asikuj/ → [ʔasikuj] 'to laugh' cf. *[asikuj]; [ʔ] epenthesized
b. /ajk'a/ → [hajk'a] 'how many?' cf. *[ʔajk'a]; [h] instead of [ʔ]

The analysis of this dissimilation pattern is based on two surface correspondence (SCorr) constraints. These are stated informally in (11) and (12) below, and defined more precisely in Chapter 2. The first constraint, CORR·[+c.g.], imposes a correspondence requirement. It demands that ejectives and glottal stops in the output are in surface correspondence with each other.

(11) CORR·[+c.g.]: 'if two consonants are [+constricted glottis], then they are in surface correspondence with each other'

The other constraint, CC·EDGE-(σ), demands that groups of correspondents never span across the edge of a syllable; that is, it forbids correspondence between consonants in different syllables.

(12) CC·EDGE-(σ): 'if two consonants correspond with each other, then they are not separated by the edge of a syllable'

Together, these surface correspondence constraints favor dissimilation over the co-occurrence of two glottal consonants, illustrated in (13). The input here is the word /ajk'a/ 'how many?' from (10b); since this root starts with a vowel, we might expect a glottal stop to be inserted, on par with words like (10a) /asikuj/→ [ʔasikuj] 'to laugh'. But, because the root /ajk'a/ contains the ejective /k'/ – a [+constricted glottis] consonant – inserting a glottal stop necessarily leads to a violation of one of the surface correspondence constraints. If the glottal stop is inserted, then it is required to correspond with the other [+c.g.] ejective; not having correspondence between them is a violation of CORR·[+c.g.]. However, if the two [+c.g.] consonants *do* correspond, they breach the limit on correspondence imposed by CC·EDGE-(σ), since they are not in the same syllable. Inserting a glottal stop into a root that already has another constricted glottis consonant in another syllable means there is no way to satisfy both surface correspondence constraints. In concert, these two constraints therefore disfavor the co-occurrence of glottal stops and other glottalized consonants, and favor dissimilation for constricted glottis.[1]

[1] Candidates in (13) are shown with their output form and surface correspondence structure, which is given in set notation and redundantly indicated by numeral subscripts on the output

(13) Cuzco Quechua glottal dissimilation: CORR·[+c.g.], CC·EDGE-(σ) » *h

Input: /ajk'a/ Output: [haj.k'a], *[ʔaj.k'a]		CORR· [+c.g.]	CC· EDGE-(σ)	*h	Remarks
☞ a.	$h_1$aj.k'$_2$a, SCorr $\mathcal{R}$: {h}{k'}	(0)	(0)	(1)	No h~k' corr.
~b.	ʔ$_1$aj.k'$_1$a, SCorr $\mathcal{R}$: {ʔ k'}		W (0~1)	L (1~0)	Corr. btw [+c.g.] Cs
~c.	ʔ$_1$aj.k'$_2$a, SCorr $\mathcal{R}$: {ʔ}{k'}	W (0~1)		L (1~0)	No corr. btw [+c.g.] Cs
~d.	$h_1$aj.k'$_1$a, SCorr $\mathcal{R}$: {h k'}		W (0~1)	e (1~1)	Corr. btw h~k' (HB'd)

The dissimilating candidate in (13a) satisfies both surface correspondence constraints, by having consonants that are not required to correspond. Instead of a glottal stop, this candidate inserts [h]. Because [h] does not share [+constricted glottis] with the ejective [k'], non-correspondence between them does not violate CORR·[+c.g.]. This also satisfies CC·EDGE-(σ): no consonant corresponds with one in another syllable. So, the optimal candidate is the one that trades off a violation of some lower-ranked constraint(s) that favor [ʔ] as the epenthetic consonant – represented here in simplified form as *h – in order to satisfy both of the higher-ranked SCorr constraints by non-correspondence.

The interacting consonants in the candidate (13a) crucially do not correspond with each other. Dissimilation represents an improvement that capitalizes on non-correspondence between two consonants. By making the surface form have consonants which do not need to correspond, it leads to an improvement on CORR constraints relative to the faithful non-correspondent candidate (13c). Having correspondence between the dissimilating consonants is harmonically bounded: it loses no matter how the constraints are ranked. The dissimilating candidate with correspondence in (13d) incurs the same *h violation as the dissimilating non-correspondent candidate (13a), plus the correspondence violations of the faithful correspondent candidate (13b). Dissimilation wins

consonants. Tableaux are in hybrid comparative format. Winning candidates are always given in row (a), and other rows represent comparisons between the winner and an alternative, losing, candidate. Integers in parentheses show constraint violations; Ws and Ls indicate a constraint's preference for the Winner or the Loser (Prince 2002). For simplicity, cells with 0~0 violation comparisons are left blank by default.

not because corresponding consonants repel each other, but because shedding common features avoids penalties incurred by having correspondence.

1.3 Correspondence, dissimilation, and harmony

1.3.1 Using the same constraints to explain both

Under the Surface Correspondence Theory of Dissimilation advanced here, the constraints that give rise to dissimilation are the same ones responsible for consonant harmony – both are the set of constraints on surface correspondence structures. The unifying characteristic of these Limiter constraints is that they all assign violations based on the properties of correspondent consonants. Dissimilation is favored by constraints that limit correspondence, which also play a crucial role in limiting the extent of harmony.

The set of CC·Limiter constraints consists of several different constraint families; a consequence of this is that languages can differ for when and where dissimilation occurs. We can see this clearly by comparing dissimilation patterns in Kinyarwanda and Zulu, two cases of dissimilation analyzed in later chapters. Both are Bantu languages, and have similar morphological structures – they have the same domain boundaries in the same places (14).

(14) Morphological structure of Zulu and Kinyarwanda (Schadeberg 2003; among others[2])
Word = Prefixes + ⟨$_{\text{STEM}}$ Root + Suffixes⟩

Both languages have dissimilation that occurs only across the edge of a domain, but they differ in which domain it is. Zulu has labial dissimilation, which occurs only across the edge of the morphological root – the boundary between roots and suffixes (15a), but not across the edge of the stem (15b). Kinyarwanda has a pattern of voiceless dissimilation known as Dahl's Law (common among east African Bantu languages). This dissimilation occurs systematically across the edge of the stem (16a), but generally does not occur across the edge of the root (16b).

(15) Zulu: dissimilation across the root edge, but not the stem edge
a. Labial dissimilation within stem, across edge of root: ⟨ɓ. . .–w⟩→⟨tʃʼ. . .–w⟩
⟨seɓenz-a⟩ 'work'
⟨setʃʼenz-w-a⟩ 'work (pass.)' *⟨seɓenz-w-a⟩
b. No dissimilation across the edge of the stem: ɓ⟨. . .w⟩→ɓ⟨. . .w⟩
ɓa⟨lw-is-a⟩ 'they cause to fight' *tʃʼa⟨lwisa⟩

[2] See Chapter 3 for further discussion of the Bantu stem and its connection to previous literature.