CHAPTER 6.

CONCLUSION

In this final chapter, I present some of the major issues raised in this dissertation. In this dissertation, I have discussed the nature and implementation of template constraints in reduplication. Recent work on reduplication has provided reasons to regard such constraints as undesirable, and there is a movement to remove such constraints, in favor of analyses in which the shape of reduplication is determined by more general structural constraints in language. One of the major contributions of this dissertation is the presentation of evidence showing that template constraints are not only undesirable, but empirically inadequate. These data are taken from examples of bare-consonant reduplication, in which the reduplicant is either never a prosodic unit, or never a consistent prosodic unit.

The second major contribution of this dissertation is the proposal of a compression model to account for the minimal shape of the reduplicant in Optimality Theory. This model accounts for all of the cases of bare-consonant reduplication in this dissertation, and can be shown to account for other cases of reduplication in which the reduplicant is more transparently a prosodic unit. This model is more empirically and theoretically adequate to account for reduplication than other proposals.

In 6.1, I discuss the theoretical implications for prosodic templates in reduplicative theory. In section 6.2, I discuss the critical constraints that are necessary for the compression model. In section 6.3, I discuss the atheoretical nature of the analyses presented in this dissertation. In section 6.4, I discuss the predictions made by the compression model, providing evidence that these predictions can be borne out empirically. In section 6.5, I discuss the relationship between prosodic well-formedness and reduplcation. In section 6.6, I present some of the other issues that have been brought up in the course of this dissertation.

6.1. The Non-Role of Prosodic Templates

In this dissertation, I have presented evidence from a number of languages in which the surface form of a reduplicant does not surface as a prosodic unit. I presented data from languages that use bare-consonant reduplication to mark certain morphological categories. This bare-C reduplication surfaces as a single consonant (C) or a two-consonant sequence (CC). These types of reduplication are difficult, if not impossible, to account for by way of a template constraint that is consistent with the prosodic morphology hypothesis.

Instead, I proposed that bare-C reduplication is the result of competition between morphemes for a single edge. This competition results in the compression of a reduplicant to a minimal shape. Such compression can take different forms:

(302) Types of Morphemic Compression

(a) two morphemes that wish to be aligned to the same edge of the word (as in Semai)

$[M_1 \; M_2]_{Word}$ — M_1 is compressed between M_2 and the edge of the word

(b) a situation in which a reduplicant is "squeezed" between two morphemes that are in competition with a single edge (as in Coushatta and Yokuts).

$[M_1 \; M_2 \; M_3]_{Word}$ — M_2 is compressed between M_1 and M_3

In order to maximally satisfy the alignment constraints between such morphemes, the reduplicant surfaces minimally. In either case, the reduplicant is compressed by the alignment constraints of other morphemes.

Besides competition for a morphological edge, compression can also be the result of limiting the intrusion of an infix. Since any material inserted within a morpheme violates the contiguity of that morpheme, the reduplicant surfaces minimally in order to limit the violations of contiguity of the surrounding morpheme. Therefore compression occurs from a single morpheme being interrupted. Such a case is found in Secwepemc, presented in 4.2.

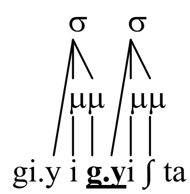
Another instance in which prosodic templates do not adequately account for types of reduplicant shape is when the reduplicant does not surface as a consistent prosodic unit. Two types of this non-uniformity are investigated in this dissertation:

(303) Types of Non-Uniformity

(a) The reduplicant surfaces in different structural roles across the reduplicative paradigm (as in Secwepemc and Hopi)

Secwepemc: *sqe**q**.xe* (coda), but *t̓q*^{o}*é.**q***^{o}*ws* (onset)

(b) the reduplicant does not surface as a sequence that can be defined by a unique prosodic unit (as in Yokuts and Hopi)



As with bare-C reduplication, these reduplicative shapes can be accounted for by compression by competition between edges or contiguity.

I have also shown that compression can be used to account for types of reduplication in which the surface form of the reduplicant is clearly a unique prosodic unit, such as Ilokano progressive and Marshallese final reduplication. In each of these cases, there is no need for a template constraint such as RED=Pros, which requires that both sides of a reduplicant be aligned to a the two edges of a single prosodic unit. In Ilokano, a single Generalized Alignment constraint for one edge is sufficient to account for the generalization that the reduplicant is always a syllable.

Such a move is advantageous for a number of reasons. For one, it allows bare-consonant reduplication to be more easily matched to other types of reduplication that are more prosodic in nature. Rather than being an oddity, it is simply the result of a reduplicant that is not specified to align to a prosodic unit.

Another advantage is that it is no longer necessary to posit template constraints to account for the shapes of reduplicants in the world's languages. Instead, alignment competition, contiguity, and prosodic alignment constraints are sufficient. Template constraints, as defined, can be likened to a condition of local conjunction over an alignment constraint for one edge of a reduplicant and another edge of a reduplicant. For example, the constraint RED=σ can be redefined as the local conjunction of the following constraints:

(304) Conjoined Constraints

Align(RED,R,σ,R)
Align(RED,L,σ,L)

However, note that the constraints in (304) can be satisfied by the following candidates:

(305) Possible Reduplicant Candidates

$[(\sigma)]_{RED}$
$[(\sigma)(\sigma)]_{RED}$
$[(\sigma)(\sigma)(\sigma)]_{RED}$, etc.

As (305) shows, the satisfaction of the two alignment constraints in (304) does not require that the reduplicant be a single syllable. The constraints merely require that there be a syllable on both edges of the reduplicant. The notion of "local" implies that the conjunction of the constraints in (304) must either refer to the same reduplicant or the same prosodic unit, but not both. In order to get both effects, local conjunction of four constraints is necessary. Two constraints refer to the syllable token, and two refer to the reduplicant token.

As such, the template constraints are a very specialized type of constraint. If the move is made to eliminate the template constraints, then the theory is more streamlined.

Generalized Alignment has been shown to be useful in a number of different contexts in Optimality Theory. Therefore, rather than having both template constraints and alignment constraints is less efficient than a theory that has only alignment constraints.

6.2. Critical Constraints

The compression model does not require the use of specialized constraints, but make use of constraints and constraint schema that are independently motivated. Constraint schema such as MAX, DEP, ANCHOR, and IDENT are not critical to the compression model. These schema are crucial to other aspects of reduplicative theory, but not to compression. The critical constraint schema are Generalized Alignment and CONTIG.

Generalized Alignment is most critical in the case of prefixal and suffixal reduplication. It is the interaction of alignment constraints that allow compression to obtain minimal reduplication. These alignment constraints are also useful in the determination of morpheme order, and are therefore not merely tied to reduplication. Constraints such as Align (RED, L, Word, L) and Align (Affix, R, Word, R) are essential in the placement of morphemes with respect to each other and the root.

The constraint Align (Root, L, Word, L) might not seem as well motivated, since the placement of affixes (reduplicative or otherwise) can be accounted for without specifying a root alignment directly. For example, if a word has a root and a prefix, then if there is a constraint Align (Affix, L, Word, L) that is highly-ranked, then it will always appear before any other morphemes, including the root. Root alignment would not play a role in such an instance. However, as a root is a morpheme in a morphologically complex string, it is not beyond reason to propose Align (Root, L, Word, L). In such a way, the root is treated as a morpheme in a string, much like any other morpheme.

The CONTIG constraint schema plays a role in the compression of infixal reduplicants. In infixal cases, the reduplicant is not compressed between two morphemes or between a morpheme and the edge of the morphological word. Instead, the reduplicant surfaces minimally in order to ensure that as little intrusion as possible is made within another morpheme, such as the root. Since Generalized Alignment and the CONTIG schema have been motivated independently in the literature, I propose that one distinct advantage to the compression model is its reliance upon existing independently necessary constraints. It does not rely upon the proposal of specialized constraints such as template constraints (McCarthy & Prince 1993a), Affix ≤ σ (McCarthy & Prince 1994a, Urbanczyk 1996) or PROSTARGET (Gafos 1995, Carlson 1998).

6.3. Atheoretical Issues

The proposals in this dissertation should not be taken as a purely Optimality Theoretic exercise. The framework in which this dissertation is written is Optimality Theory, but the facts and problems relating to reduplication would be present in any framework.

In McCarthy & Prince (1986), the authors proposed that reduplication can be accounted for by noting the adherence of reduplication to prosodic units. This typological fact holds true, regardless of the framework. However, the difficulty is ensuring that the cases of reduplication that do not easily fall into prosodic units be accounted for by similar means, rather than being simply exceptions to the rule. Optimality Theory is a framework which allows for an effective illustration of the problem and a proposed solution.

It is not clear that compression can be defined in terms of a derivational framework. Compression relies upon the idea that the reduplicant has a shape that best satisfies constraints on morpheme order. Thus, it is the most harmonic candidate, taking into account competition between morphological edges. Whether or not compression is tied to Optimality Theory, compression is dependent upon a framework that includes harmonic evaluation.

6.4. Predictions of the Compression Model

The implementation of the compression model makes a number of predictions regarding the types of reduplication found in the world's languages. One prediction that the compression model makes is that the definition of bare-consonant reduplication is not specific enough. The definition of bare-consonant reduplication given by Sloan (1988) is that bare-consonant reduplication is the reduplication of a single consonant (C) or a string of two consonants (CC). Under compression, bare-consonant reduplication falls out by the high-ranking of morpheme order constraints. Thus, it is not a special or exceptional case of reduplication, but the emergence of the most unmarked reduplicant.

However, under the compression model, there are limits upon what consonants can be included in a C or CC reduplicant. Given a base with more than one consonant, it is not possible that a CC reduplicant be any arbitrary subset of the consonants in that base. Instead, the only consonants that can be included in a CC reduplicant are the consonants that are at each edge of a string to which a reduplicant corresponds. In a single C reduplicant, the reduplicant is the consonant at either one edge of the base or the other.

This is the result of the relative ranking of anchoring constraints with compression constraints. If the constraint ranking is LEFT-ANCHOR$_{BR}$ >> Compression >> RIGHT-ANCHOR$_{BR}$, then the reduplicant is a single C that matches the left edge of the base. The following tableau illustrates for an input /RED, $C_1 \ldots C_n$/, where $C_1 \ldots C_n$ refers to a consonant-initial and consonant-final root composed of n segments (I assume a prefixal reduplicant, but the same holds for a suffixal reduplicant):

(306) LEFT-ANCHOR$_{BR}$ >> Compression >> RIGHT-ANCHOR$_{BR}$

/RED, $C_1 \ldots C_n$/	LEFT-ANCHOR$_{BR}$	ALIGN-RED-L	ALIGN-Root-L	RIGHT-ANCHOR$_{BR}$
☞ a. $\underline{\mathbf{C_1}}$-$C_1 \ldots C_n$			C_1	*
b. $\underline{\mathbf{C_2}}$-$C_1 \ldots C_n$	*!		C_2	
c. $\underline{\mathbf{C_1 C_2}}$-$C_1 \ldots C_n$			C_1C_2!	
d. $\underline{\mathbf{C_{n-1}}}$-$C_1 \ldots C_n$	*!		C_{n-1}	*

As tableau (306) shows, candidate (a), in which the reduplicant is a copy of the leftmost consonant of the root, is chosen as optimal, even though it violates RIGHT-ANCHOR$_{BR}$. Candidate (b) is eliminated by LEFT-ANCHOR$_{BR}$, as the single-C reduplicant is the rightmost consonant of the root. Candidate (c) is eliminated by the compression constraints, even though it maximally satisfies both anchoring constraints. Candidate (d) shows that a candidate that copies from a base-internal consonant cannot be chosen as optimal, as it violates both anchoring constraints.[1] The reverse constraint ranking, RIGHT-ANCHOR$_{BR}$ >> Compression >> LEFT-ANCHOR$_{BR}$ would result in a single-C reduplicant that is a copy of the final consonant, as expected.

However, when both anchoring constraints are ranked above compression, then a CC reduplicant surfaces, with a copy of the initial and final consonants of the root. The following tableau illustrates:

(307) LEFT-ANCHOR$_{BR}$, RIGHT-ANCHOR$_{BR}$ >> Compression

/RED, $C_1 \ldots C_n$/	LEFT-ANCHOR$_{BR}$	RIGHT-ANCHOR$_{BR}$	ALIGN-RED-L	ALIGN-Root-L
a. **<u>C_1</u>**-$C_1 \ldots C_n$		*!		C_1
b. **<u>C_2</u>**-$C_1 \ldots C_n$	*!			C_2
☞ c. **<u>C_1C_2</u>**-$C_1 \ldots C_n$				C_1C_2!
d. **<u>C_{n-1}</u>**-$C_1 \ldots C_n$	*!	*		C_{n-1}

As tableau (307) shows, this constraint ranking chooses a CC reduplicant that is a copy of the left and right edges of the base. Thus, candidate (c), which satisfies both LEFT- and RIGHT-ANCHOR$_{BR}$ is chosen as optimal.

As illustrated by the analyses of Semai expressive reduplication (2.2.1) and Yokuts, a CC reduplicant surfaces as a result of the need for a compressed reduplicant to anchor to both edges of a domain, whether output base, or input stem. If such anchoring constraints are ranked above root alignment, then regardless of the number of consonants in a root, the reduplicant will surface as CC. Observe the following strings and corresponding reduplicants:

[1] Studies of reduplication by Moravcsik (1976) and Marantz (1982) have stated the generalization that all cases of reduplication must begin copying at one edge of the base or the other, not at a base-internal

(308) Possible CC Reduplicants:

C_1VC_2	C_1C_2	
$C_1VC_2VC_3$	C_1C_3	$*C_1C_2, C_2C_3$
$C_1VC_2VC_3VC_4$	C_1C_4	$*C_1C_2, C_1C_3, C_2C_3, C_2C_4, C_3C_4$

For each of the strings in (308), there is only one possible CC reduplicant. The impossible CC reduplicants are those in which the two consonants of the CC string are not at the peripheral edges of the string, as shown by the tableaux in (306) and (307).

Another way in which a two-consonant input can correspond to a CC reduplicant is if there is a constraint that requires that all consonants of the string have corresponding segments in the reduplicant. Such a constraint would be MAX_{BR}-C or MAX_{IR}-C (see the definition of MAX_{IO}-C in (241)). By this constraint, every consonant in a string will be in the reduplicant to which it corresponds. If the string has only two consonants, then there will be a CC reduplicant that includes the consonants that are at the peripheral edges of the reduplicant.

However, if a string has more than two consonants, and MAX_{XR}-C (where X refers to either base or input) is ranked high, then the reduplicant will surface with as many consonants as there are in the string. For example, the following strings and reduplicants are possible with a high-ranking of MAX_{XR}-C:

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consonant. This would seem to indicate the universal nature of anchoring constraints, as without such constraints, a base-internal consonant would be equally viable for reduplication.

(309) Maximal Consonantal Faithfulness:

C_1VC_2	C_1C_2	
$C_1VC_2VC_3$	$C_1C_2C_3$	$^*C_1C_2, C_2C_3, C_1C_3$
$C_1VC_2VC_3VC_4$	$C_1C_2C_3C_4$	$^*C_1C_2, C_1C_3, C_2C_3, C_2C_4, C_3C_4, C_1C_4,$

As shown in (309), the only possible consonant reduplicants are those in which the reduplicant surfaces with consonants that correspond to all consonants of the string. Correspondence Theory allows either maximal correspondence (the MAX schema, see Appendix) or correspondence at an edge (the ANCHOR schema, see Appendix).

Based on the discussion above, it appears that a bare-consonant reduplicant can surface as the following:

(310) Possible Bare-Consonant Reduplication:

(a) A single consonant (C) that corresponds to one edge of a string.

(b) A string of two consonants (CC) that correspond to the peripheral consonants of a string.

(c) A string of consonants in which every consonant of a string has a corresponding consonant in the reduplicant.

Therefore, a bare-consonant reduplicant surfaces as either a peripheral consonant of a string, both peripheral consonants of a string, or all consonants of a string.

Although the focus of this dissertation has been consonant reduplication, the compression model does not limit reduplicants to consonants. Instead, the compression model accounts for minimal reduplication, consonant or otherwise. Vowel-peripheral data with respect to the languages presented in this dissertation is not presently available, for a number of reasons. In Semai and Yokuts, verb roots must begin and end with a consonant. In Marshallese, vowel-initial roots do not reduplicate, but undergo other affixal phenomena to mark the distributive. In Secwepemc and Hopi, there are no available vowel-initial data. Only in Coushatta is a vowel-initial form available (*alotkan*), and in that instance, the vowel is skipped, and the next available consonant is reduplicated (*alot**l**o:kan*).

However, if one were to hypothesize vowel-peripheral roots, then the compression model would predict that a vowel could satisfy minimal reduplication. For example, if a prefixal reduplicative phenomenon is marked by the copy of the segment at both edges of a root, (LEFT-ANCHOR$_{BR}$, RIGHT-ANCHOR$_{BR}$ >> Compression) then the following reduplicated forms are possible:

(311) LEFT-ANCHOR$_{BR}$, RIGHT-ANCHOR$_{BR}$, ALIGN-RED-L >> ALIGN-Root-L:

$C_1 \ldots V_n$	$\underline{\mathbf{C_1 V_n}}$-$C_1 \ldots V_n$
$V_1 \ldots C_n$	$\underline{\mathbf{V_1 C_n}}$-$V_1 \ldots C_n$
$V_1 \ldots V_n$	$\underline{\mathbf{V_1 V_n}}$-$V_1 \ldots V_n$

By the same token, if a prefixal reduplicative phenomenon is marked by a copy of the initial segment of a root, then the following reduplicants are possible:

(312) LEFT-ANCHOR$_{BR}$, ALIGN-RED-L >> ALIGN-Root-L:

$V_1 \ldots C_n$	$\underline{\mathbf{V_1}}$-$V_1 \ldots C_n$
$V_1 \ldots V_n$	$\underline{\mathbf{V_1}}$-$V_1 \ldots V_n$

In the data in (312), the reduplicant surfaces as a single vowel.

The case illustrated in (311) is found in languages such as Umpila, an Australian language, and Nakanai, an Austronesian language. The following data sets illustrate:

(313) Umpila Progressive Reduplication (Shim 1996)

maka	maka-l-**ma**	'die'
puuya	puuya-l-**pa**	'blow'
puŋka	puŋka-l-**pa**	'fall'

(314) Nakanai Reduplication (Shim 1996)

mota	**ma**-mota	'vines'
sile	**se**-sile	'tearing'
sio	**so**-sio	'carrying on ceremonial litter'
biso	**bo**-biso	'members of the Biso group'

As shown in (313) and (314), the reduplicant is a copy of both the leftmost segment and the rightmost segment of the root.

Another example may be found in the language Tawala, an Austronesian language (Ezard 1997).[2] The following data illustrate:

(315) Tawala Reduplication

gae	**ge**-gae	'go up'
houni	**hu**-houni	'put it'
beiha	**bi**-beiha	'search'
tou	**tu**-tou	'weep'
teina	**ti**-teina	'pull'
mae	**me**-mae	'stay'

As the data in (315) show, if the initial syllable has a diphthong, the reduplicant copies the first and last segment of an initial CVV syllable. If the base is defined as the initial heavy syllable, then the reduplicant anchors to both edges of that base, and is as small as necessary to maintain that anchoring.

The case of a single vowel reduplicant can possibly be found in Sanskrit reduplication. The following illustrates, for a prefixal reduplicative pattern:

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[2] Many thanks to Catherine Hicks for this data.

(316) Sanskrit Weak-Grade Vowel-Initial Reduplication (McCarthy & Prince 1986)

RED+aC	a:C
RED+iC	i:C
RED+uC	u:C

These schematic examples imply that when vowel-initial root undergoes this reduplicative pattern, the result is an initial long vowel. A full analysis of this phenomenon is beyond the scope of this dissertation, but (316) indicates that such reduplication is at least possible.

The compression model also makes predictions that are different from the predictions made by ALLσL (Walker 1998). The constraint ALLσL minimizes the reduplicant because the reduplicant must not increase the number of syllables in a form. However, consonant reduplication need not always increase the number of syllables in a form. For example, if one were to find a language like Secwepemc in which word-medial consonant clusters were allowed, then a single-consonant reduplicant need not increase the number of syllables. If the reduplicant were to be placed after the stressed vowel in a form like *pláwi*, then the following reduplicants are possible:

(317) Hypothetical Reduplicants (from /pláwi/)

plá**p**.wi
plá**p.l**wi

Both of these reduplicants result in a disyllabic string. Therefore, they both incur the same number of violations of ALLσL, and *pláplwi* would be chosen as optimal, as it maximally satisfies faithfulness between the reduplicant and the initial syllable. However, the compression model would choose *plápwi* as the correct form, as it incurs the fewest violations of O-CONTIG. If such data were found, the reduplicative output would allow a decision to be made between the compression model and ALLσL. I leave such concerns to further research.

6.5. Relationship Between Prosodic Well-Formedness and Reduplication

Under the compression model, there is a strong relationship between the surface shape of a reduplicant and constraints on the prosodic structure of well-formed utterances in language. The compression model drives minimal reduplication, optimally resulting in a single-segment reduplicant. Reduplicants often surface as more than a single segment in order to satisfy other constraints such as anchoring or maximal faithfulness. However, it is often the prosodic constraints of a language which determine the final surface shape of a reduplicant, showing that the emergence of the unmarked complements the compression model to account for the surface shape of reduplication.

In some instances, the reduplicant must reduplicate more than a single segment in order to satisfy prosodic well-formedness constraints. In Semai, reduplicative constraints require that both edges of the root be anchored. The compression model requires that the reduplicant be as small as possible in order to satisfy those constraints. However, it is the fact that minor syllables are licit in Semai that allows the reduplicant to surface as a CC prefixal sequence. In other languages, such sequences are not prosodically well formed. In such cases, the reduplicant cannot surface as that string and the surface shape of the reduplicant over-reduplicates.

In the case of Marshallese consonant-doubling, for example, the compression model in combination with a leftward anchoring constraint results in a single-consonant prefixal reduplicant. However, such a structure is not parsable in the language (****b***biqenqen*). If a dialect allows epenthesis in such cases, as in the Ralik dialect, the reduplicant is allowed to surface as a single-consonant reduplicant as long as there are epenthetic segments added to form a parsable string (*yi**b**biqenqen*). On the other hand, if epenthesis is not a viable alternative in a dialect, as in the Ratak dialect, the reduplicant must copy more material, resulting in a syllable (***bi**biqenqen*). In this case, the syllable shape of the reduplicant is not the result of a prosodic template, but the interaction of prosodic well-formedness with the compression model. In the same fashion, Marshallese final-syllable reduplication surfaces as a syllable in order to satisfy general prosodic well-formedness and structural role faithfulness.

Another way in which reduplicant shape is determined by prosodic well-formedness is when the reduplicant is part of a morphosemantic form that has a certain prosodic structure requirement. For example, in Hopi, the plural forms under analysis must begin with an initial heavy syllable. As a result, the Hopi reduplicant surfaces with different shapes across the paradigm (CV or CVV) in order to satisfy this requirement, while still maintaining other reduplicative faithfulness constraints.

In a case like Yokuts, general prosodic well-formedness constraints conspire with morphosemantic prosodic well-formedness constraints to determine the surface shape of a reduplicant. Anchoring constraints and compression drive a CC reduplicant, but such a form is not parsable by general prosodic well-formedness constraints (*giy′**gy**iʃta). One possible solution is to reduplicate more material, as in Marshallese, but such a form would not satisfy the prosodic requirements of a form with the morphosemantic feature of "repetitive" (*giy′**giy**iʃta). In order to ensure that the reduplicant surfaces with a light syllable, epenthesis must take place (giy′i**gy**iʃta).

Finally, there are instances such as Nancowry, where reduplication occurs in order to satisfy prosodic requirements on a prosodic word. Since all roots in Nancowry must be disyllabic, reduplication and epenthesis occur to provide the necessary material. In this case, the surfacing of reduplication is entirely driven by prosodic concerns (the form must be disyllabic and all syllables must be anchored to the root).

6.6. Other Theoretical Issues

Other issues have been raised in the course of this dissertation, and I discuss some of those issues here. One issue that has been illustrated in this dissertation is the idea of non-identical reduplication. In Coushatta, the reduplication of VC.CVC roots results in a morpheme that does not contain any material that is copied from the base. In essence, an input morpheme that is phonologically-unspecified surfaces with no reduplication, because of the high-ranking of structural constraints in Coushatta grammar. This same phenomenon occurs in Nancowry when the coda of the base is /s/, /y/, or /l/. Because of structural constraints in Nancowry grammar and markedness constraints on vowels, the reduplicated root does not surface with any copied material.

Another issue that has appeared in this dissertation is the alignment of a morphological domain to a phonological feature. As originally defined, the arguments of

Generalized Alignment were taken from sets of morphological or prosodic units. However, recent work in featural phonology has made use of features as the first argument of alignment constraints (Kirchner 1993). If morphological and featural units are possible arguments of alignment constraints, then it is also possible that featural units can be the second argument of an alignment constraint. McCarthy and Prince (1993b) speculated that such constraints were possible (by redefining ONSET and NOCODA as alignment constraints), and in chapters 4 and 5, such constraints were shown to be useful for Hopi and Ilokano reduplication.

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