Appendix: A Set of Constraints on the Correspondence Relation

This appendix provides a tentative list of constraints on correspondent elements. Affinities with other constraint-types are noted when appropriate. All constraints refer to pairs of representations (S_1, S_2), standing to each other as (I, O), (B, R), etc. The constraints also refer to a relation $\Re$, the correspondence relation defined for the representations being compared. Thus, each constraint is actually a constraint-family, with instantiations for I-O, B-R, I-R, Tone to Tone-Bearer, and so on.

The formalization is far from complete, and aims principally to clarify. As in §2, we imagine that a structure S_i is encoded as a set of elements, so that we can talk about $\Re$ on (S_1, S_2) in the usual way as a subset, any subset, of $S_1 \times S_2$. We use the following standard jargon: for a relation $\Re \subset A \times B$, $x \in \text{Domain}(\Re)$ iff $x \in A$ and $\exists y \in B$ such that $x \Re y$; and $y \in \text{Range}(\Re)$ iff $y \in B$ and $\exists x \in A$ such that $x \Re y$.

(A.1) MAX

Every element of S_1 has a correspondent in S_2.

$\text{Domain}(\Re) = S_1$

(A.2) DEP

Every element of S_2 has a correspondent in S_1.

$\text{Range}(\Re) = S_2$.

MAX (= (3)) and DEP are analogous respectively to PARSE-segment and FILL in Prince & Smolensky (1991, 1993). Both MAX and DEP should be further differentiated by the type of segment involved, vowel versus consonant. The argument for differentiation of FILL can be found in Prince & Smolensky (1993), and it carries over to FILL's analogue DEP. In the case of MAX, the argument can be constructed on the basis of languages like Arabic or Rotuman (McCarthy 1995), with extensive vocalic syncope and no consonant deletion.

(A.3) IDENT(F)

Correspondent segments have identical values for the feature F.

If $x \Re y$ and x is [γF], then y is [γF].

IDENT (= (5)) replaces the PARSE-feature and FILL-feature-node apparatus of Containment-type OT. See Pater (this volume) and §5.4 above for further developments. As stated, IDENT presupposes that only segments stand in correspondence, so all aspects of featural identity must be communicated through correspondent segments. Ultimately, the correspondence relation will be extended to features, to accommodate "floating" feature analyses, like those in Archangeli & Pulleyblank (1994) or Akinlabi (1996). (Also see Lombardi 1995, Zoll 1996.)

(A.4) Contiguity

a. I-CONTIG ("No Skipping")

The portion of S_1 standing in correspondence forms a contiguous string.

$\text{Domain}(\Re)$ is a single contiguous string in S_1.

b. O-CONTIG ("No Intrusion")

The portion of S_2 standing in correspondence forms a contiguous string.

$\text{Range}(\Re)$ is a single contiguous string in S_2.

These constraints characterize two types of contiguity (see also Kenstowicz 1994). The constraint I-CONTIG rules out deletion of elements *internal* to the input string. Thus, the map *xyz* → *xz* violates

I-CONTIG, because the Range of $\Re$ is {x, z}, and *xz* is not a contiguous string in the input. But the map *xyz* → *xy* does not violate I-CONTIG, because *xy* is a contiguous string in the input. The constraint O-CONTIG rules out internal epenthesis: the map *xz* → *xyz* violates O-CONTIG , but *xz* → *xzy* does not. The definition assumes that we are dealing with strings. When the structure S_k is more complex than a string, we need to define a way of plucking out a designated substructure that is a string, in order to apply the definitions to the structure.

(A.5) {RIGHT, LEFT}-ANCHOR(S_1, S_2)

Any element at the designated periphery of S_1 has a correspondent at the designated periphery of S_2.

Let *Edge*(X, {L, R}) = the element standing at the *Edge* = L, R of X.

RIGHT-ANCHOR . If x = Edge(S_1, R) and y = Edge(S_2, R) then x$\Re$y.

LEFT-ANCHOR. Likewise, *mutatis mutandis*.

In prefixing reduplication, L-ANCHOR >> R-ANCHOR, and vice-versa for suffixing reduplication. It is clear that ANCHORing should subsume Generalized Alignment; as formulated, it captures the effects of Align(MCat, E_1, PCat, E_2) for $E_1 = E_2$ in McCarthy & Prince (1993b). It can be straightforwardly extended to (PCat, PCat) alignment if correspondence is assumed to be a reflexive relation. For example, in *(bí.ta)*, the left edge of the foot and the head syllable align because *b* and its correspondent (which is, reflexively, *b*) are initial in both.

(A.6) LINEARITY — "No Metathesis"

S_1 is consistent with the precedence structure of S_2, and vice versa.

Let x, y $\in S_1$ and x′, y′ $\in S_2$.

If x$\Re$x′ and y$\Re$y′, then

$x < y$ iff $\neg (y' < x')$.

(A.7) UNIFORMITY — "No Coalescence"

No element of S_2 has multiple correspondents in S_1.

For x, y $\in S_1$ and z $\in S_2$, if x$\Re$z and y$\Re$z, then x = y.

(A.8) INTEGRITY — "No Breaking"

No element of S_1 has multiple correspondents in S_2.

For x $\in S_1$ and w, z $\in S_2$, if x$\Re$w and x$\Re$z, then w = z.

LINEARITY excludes metathesis. UNIFORMITY and INTEGRITY rule out two types of multiple correspondence — coalescence, where two elements of S_1 are fused in S_2, and diphthongization or phonological copying, where one element of S_1 is split or cloned in S_2. On the prohibition against metathesis, see Hume (1995, 1996) and McCarthy (1995). On coalescence, see Gnanadesikan (1995), Lamontagne & Rice (1995), McCarthy (1995), and Pater (this volume).