The Special and the General

Alan Prince 2/26/2000 PLC-24
Rutgers University

(1) **The issue**. Strict domination as the core theory of constraint interaction lays down a tight and predictive formal groundwork. Designing a grammatical theory to have various targeted general properties requires as well the cooperation of the *constraints* themselves.

> Strict domination: in a hierarchy of constraints, $C_1 >> C_2 >> ... C_n$, $\omega \succ z$ iff ω is better than z on the highest-ranked constraint that distinguishes them.

(2) **Harmonic completeness.** A system with a complex element contains *all* elements of lesser complexity. Markedness theory programmatically assumes that something like harmonic completeness (HC) is true of language.

(3) **Example** (*idealized*). Assume a markedness hierarchy: *p >>*k >>*t . [*p* is more marked than *k*, *k* than *t*.]
Assume a faithfulness constraint F(Place) — "input and output correspondents have the same POA."
Now consider various locations of F(Place) within the hierarchy.(Cf. *Prince & Smolensky 1993*, Chs.8-9).

(4)

Grammar	*Mapping Effects*		*Resulting System*
F(PL) >> *p >> *k >> *t	p,k ↛ t	fatal *F(PL)	{p, k, t}
*p >> ***F(PL)*** >> *k >> *t	p → t	but *k ↛ t by F(PL)	{k,t}
*p >> *k >> ***F(PL)*** >> *t	p → t, k → t		{t}

(5) In **H**>>F, everything in subhierarchy **H** impinges on F, and we see a cumulative effect. Strict domination and constraints against *individual elements* project to a hierarchy of inclusion among *languages*.

(6) Each resulting system in (4) is harmonically complete. But the result depends entirely on the character of F. Distinguish F(p) from F(k) — Harmonic Completeness can evaporate.

Grammar	*Effect*	*Resulting System*	
<u>**F(p)** >> *p</u> >> <u>*k >> **F(k)**</u> >> *t	p → p, k → t	{p, t}	k is missing, but p is present!

(7) **Faithfulness & Markedness**. For harmonic completeness, we must have NOT [F(p)>>F(k)].

- *Either* F(k) >> F(p)
- *Or* there is only one constraint F(k,p).

In either case, preservation of p *via* ⟨p → p⟩ implies preservation of k *via* ⟨k → k⟩.

(8) *Moral*: For HC, it is not sufficient to simply declare M:*p >>*k >>*t. We must also have the right theory of F.

(9) **Focus today**: Treatment of special-case/general-case phenomena. What must one say about the formal structure of constraints and the character of their relations to accomodate *the special and the general*?

(10) **Theses**: relations of conflict are resolved by strict domination *tout court*; behavior of relations of stringency follows from the interpretation of substantive *linguistic scales* within strict domination theory.

(11) **Background**: it has been thought that a special formal meta-condition — the 'Elsewhere Condition' or 'Proper Inclusion Precedence' was at play in these relations. (Pānini, Koutsoudas, Sanders, & Noll; Kiparsky; Halle & Idsardi). In rule-package serialism, the EC imposes a special transderivational condition on rule application. In core RPS, the applicability of a rule is determined by inspecting *structure*. But under EC, it is determined by whether *another rule has applied* previously in the derivation, regardless of structural effects.

> EC: Kiparsky 1973 et seq. Given rules [1]A→B/C—D and [2] E→F/X—Y, if CAD is a subcondition of XEY (denotes a subset of structures), and A→B contradicts or is identical to E→F, then application of [1] blocks [2].

(12) This is odd or untenable in post-1970's theory, where

[i] mappings ('processes') result from complex interactions between diverse quite general conditions and are not packaged into tell-all 'rules', so that determining or even defining the EC relation becomes difficult; and

[ii] output conditions determine complementarity. E.g. given certain syllable structure targets, you can assimilate or delete to achieve them. Deletion occurs not because 'special' nasal assimilation *hasn't applied*, but because assimilation (e.g. tk→kk) simply would not meet the licit targets (among which, 'no obstruent codas').

For discussion, see Prince 1998, Baković 1999a.

(13) **Paninian Oppositional relations**. Special/general-*like* relations between conflicting constraints are not descriptively uncommon:

A. Faithfulness vs. Markedness. F(α) says *some* [α]'s are good (α ←/α/). M:*α says *all* [α]'s are bad.

B. Markedness vs. Markedness. M:**si* says some *s*'s are bad; M:**š* says all *s*'s are good.

C. Faithfulness vs. Antifaithfulness. MAX: 'Don't delete anything' vs. ANTIMAX: "Delete something"
(Alderete 1999, Horwood 1999)

(14) Here it appears that strict domination controls the conflict without further ado. (P&S 1993). In outline:

A. F(α)>>M:*α 'keep α'
M:*α>>F(α) 'map α unfaithfully to something else'

B. M:**si* >> M:**š* '*ši* ≻ *si*'
M:**š* >> M:**si* '*si* ≻ *ši*'

C. MAX>>ANTIMAX 'Don't delete'
ANTIMAX >>MAX 'Delete *minimally*'

• These relations are no different from any others that arise between conflicting constraints.

(15) **Scales, hierarchies, & multiplicities**

A. t ≻ k ≻ p .CV. ≻ .CVC. á ≻ í ≻ ə́. agent-subj. ≻ patient-subj. ≻ nonthematic-subj.

B. segment ⊑ mora ⊑ syllable ⊑ foot ⊑ prwd ⊑ phon-phrase ... ; subord.-S ⊑ matrix-S ⊑ discourse ...

C. Words contain *many* segments, syllables; sentences many phrases, etc.
(See e.g. inter alia P&S 1993:ch. 8; Aissen 1999)

(16) **Paninian Stringency**. Any constraint with domain G, where S⊑G, also applies to S. Conversely, a violation accrued in S is also a violation in some G⊒S; but not vice versa.

♦A constraint with domain G is *more stringent* than the same constraint limited to domain S.

■ IDENT(voi)/Onset detects voicing/devoicing processes in onset position. IDENT(voi) detects them everywhere.

■ M:*V[-cont]V detects intervocalic stops. M:*[−cont] detects stops everywhere.

(17) **Violation structure** of the stringency relation. The total violations of general IDENT(α) consist of

[i] those of special IDENT(α)/ONS, ***plus***

[ii] those incurred where α appears not-in-Onset.

This is typical and can be used to provide a full characterization of the relationship.

Stringency. |G| = |S| + |D|. A constraint G is *more stringent* than S if the violations assessed by G can be *partitioned* into those assessed by S and those assessed by some other descriptor D = G\S.

NB. The violations assessed by S and D must be disjoint..

(18) Example.

	S:*V[−cont]V	G:*[−cont]
pa*t*u*t*i	**	** *

(19) **Reading scales.** A linguistic markedness scale $a \succ b \succ c \succ \ldots$ wants interpretation. What does it mean for the head-to-head comparison of actual linguistic forms *composed of* a,b,c,...?

(20) **Markedness Domination Thesis**. (MDT). In any comparative rating of forms that turns on the relative markedness of substructures α and β, where $\alpha \succ \beta$, a structure containing β is always worse than one that lacks β.

(21) Representing scales. There are *many, many ways* a constraint+ranking system can embody a scale.
At one extreme, one could have a single n-ary constraint. At the other, a constraint for each degree of the scale.

(22) Scale sense: it's not just that the elements a,b,c,... stand in a certain *order*; crucially, the question is how that order may be *interrupted.* A typical sense of markedness is that a language may have {a}, or {a,b}, or {a,bc,},.... In this case, we must recognize each of the degrees of the scale in the constraint system! — the scale is 'penetrable' by other constraints.

•There are still many, many ways to do this!

(23) **Impenetrable scales**. Although there are languages that disallow codas entirely, no language sets a limit of *one* coda per word, or *two* codas, or *three*. This follows from the impenetrability of the NoCoda violation-scale.

(24) **Penetrability**. Element hierarchies and Inclusion families provide 2 approaches using *binary* constraints:

(25) **Element hierarchy.** $a \succ b \succ c \succ d$. Construct one constraint for each scale degree. (P&S: ch. 8.)

$$*d \equiv \begin{array}{c} abc \\ | \\ d \end{array} \qquad *c \equiv \begin{array}{c} abd \\ | \\ c \end{array} \qquad *b \equiv \begin{array}{c} acd \\ | \\ b \end{array} \qquad (*a \equiv \begin{array}{c} bcd \\ | \\ a \end{array})$$

(last is unnec. if no alternative to *a*)

(26) All of the constraints except the first *contradict* the scale! E.g. [*c] says $d \succ c$, [*b]says $c,d \succ b$, etc.
• Further they all conflict w/ each other: [*c] says $b \succ c$ but [*b] says $c \succ b$, etc.
•• Therefore, these MUST be ranked.
••• The scale is expressed in exactly one ranking: *d >> *c >> *b (>> *a)

worst → → → → → → → → → *best*

	*d	*c	*b	(*a)
a				(*)
b			*	
c		*		
d	*			

(27) **Inclusion hierarchy**. $a \succ b \succ c \succ d$ Construct every bisection of the scale (every '*feature*'):

$$abc|d \equiv \begin{array}{c} abc \\ | \\ d \end{array} \qquad ab|cd \equiv \begin{array}{c} ab \\ | \\ cd \end{array} \qquad a|bcd \equiv \begin{array}{c} a \\ | \\ bcd \end{array}$$

(28) Every such constraint C *respects* the scale S in that $(x \succ y; C) \Rightarrow (x \succ y, S)$ — S refines C.
In fact, from the totality of such constraints the scale is entirely reconstructible *without ranking*.

special → → → → → → → → → *general*

	*{d}	*{d,c}	*{d,c,b}	*{d,c,b,a}
a				*
b			*	*
c		*	*	*
d	*	*	*	*

(29) **No direct conflict**. The inclusion hierarchy gives the scale order under any ranking: no *conflict* between members. (The element hierarchy, with extensive conflicts, only under one).

(30) Therefore, the set-inclusion hierarchy allows for an interesting further range of grammars! These require the intervention of other constraints to establish crucial rankings. The study of *Paninian relations* is the study of the set of grammars obtained by free ranking of a set-inclusion hierarchy with other constraints that allow crucial ranking to be established.

(31) An **Anti-Paninian ranking** is one in which more stringent G crucially dominates less stringent S. How ◊ ?

(32) **Lombardi's AP ranking** (Lombardi 1999). Voicing in Swedish obstrucnt clusters: [−voi] is dominant.

Types: bd → bd   pd → p*t*   bt → *p*t   (pt → pt)

Exx. (Hellberg 1974, S. Anderson p.c. > Lombardi)

äg+de → ä*gd*e   own+past = 'owned'
läs+de → läs*t*e   read+past = 'read'
hög+tid → hö*k*tid   high+time = 'festival'

(33) *IDENT(voi)* >> *C[+voi]

/bygd/ →	M:AGREE(voi)	F:**IDENT(voi)**	M:*C[+voi]	F:**IDENT/Ons(voi)**
bygd			**	
bykt		**!		
bygd ~ bykt		W	L	

(34) AGREE(voi), *IDENT(voi)* >> <u>*C[+voi] >> *IDENT/Ons(voi)*</u>

/...as+de/ →	M:AGREE(voi)	F:**IDENT(voi)**	M:*C[+voi]	F:**IDENT/Ons(voi)**
...as*t*e		*		*
...azde		*	* ! *	
s.*t* ~ z.d			W	L

The distinction between IDENT/Ons and IDENT/elsewhere is forgotten in IDENT(voi); whence, Markedness tells.

(35) **FALSE BELIEF ALERT #1.** "If G is ranked above S, then S can play no role in the grammar." As seen: no!

(36)★**Satisfaction guaranteed**. Let S, G stand in the stringency relation. Then SAT(G) → SAT(S).
If G is fully satisfied, then so is S, since |G| = 0 = |S|+|D| , whence |S|=0. A very weak property.

(37)★★**Adjacency in Hierarchy.** ...**GS** ...≡ ......**SG**...
G and S do not conflict, because |G|=|S|+|D| gives |G|≥|S|, i.e NEVER |S|<|G|. When adjacent, their mutual ranking cannot crucial
Note! As seen, G and S may still be crucially ranked, by transitivity: G>>T>>S *or* S>>T>>G.
Observe that one or the other or both may be active on different candidate sets (*bygd* v. *as+de*)

(38) **Total Deactivation.** To assure that A>>B guarantees that B plays no role in the grammar, we need the following: *no violation class of A* is split by the violation classes of B, for any candidate set. (A refines the partition of the candidate set imposed by B; the ordering of the violation classes is irrelevant.)

Ex. **Repetition Futility**. …C>>…>>C>>… The lower-ranked copy is useless. If two constraints have the *same* violation classes, then the subordinate of the pair is never active. See also (59) below.

(39) **Utility of the Paninian Ranking Scheme**. (Paninian intervention).

a. **F**/E >> **M** >> **F** : Eliminate α except in E.

Ex. F(voi)/Ons >> *+voi >> F(voi) ‘eliminate voicing except in onset’

b. **M**/E >> **F** >> **M** :Retain α except in E.

Ex. $*CC]_\sigma$ >> MAX >> $*C]_\sigma$ ‘retain codas except when complex’

Markedness implications.

F/E, M, F: if L has α in U−E, then L has α generally. voiced codas ⇒ vd onsets

M/E, F, M: if L has α in E, then L has α generally. complex codas ⇒ simple codas

(40) **What do AntiPaninian Rankings look like?** An anti-paninian ranking, with G crucially dominating S, can only happen, by the *Adjacency Property* (37), in …G>>**T**>>S…

(41) Suppose G sits atop the hierarchy, undominated. Surely, GEN is such that for every candidate set, there is something in it that completely satisfies G.

Then, by *Satisfaction Guaranteed* ★(36), S is also satisfied on every candidate set!

S, then, cannot be crucially subordinated.

So, with G undominated, S and G cannot be crucially ranked, even by an intervening T.

(42) For AP ranking, then, there must be a dominating D above G. The simplest AP ranking is this:

D >> G >> T >> S

(43) **AP Signature**. To rank **T** and **S**, it must be that S distinguishes some candidate pair *ω* vs. *z*.

But if G is satisfied by both, S must be too. (*Satisfaction Guaranteed* (36)). So G is violated by both. So we have the AP scheme—

	D	G	T	S
☞ ω		*		*
z		*	* !	
ω ~ z			W	L

(44) **FALSE BELIEF ALERT #2. Form Stringency** does not follow from **Element Stringency!**

(45) Constraints are defined in terms of *elements*, but evaluate *forms*, composed of possibly many elements.

(46) **Multiplicity** of violation upsets the stringency apple cart. Consider this abstract situation:

/f/ →	S = *{a}	G= *{a,b}
bb		**
a	*	*
bb ~ a	W	L

(47) Here G & S actually **conflict**! To speak of stringency in evaluation, we must be sure that the constraints stand in the appropriate relation with respect to the actual candidates.

(48) This leads to our first appalling result. Consider *C]σ *vs.* *CC]σ (NOCODA vs. NODOUBLECODA)

maptk →	G = *C]σ	S = *CC]σ
map.tik.	**	
maptk.	*	*
maptk. ~ map.tik.	W	L

(49) With G >> S, we actually prefer .CvCCC. to CvC.CvC !!

(50) **Consequences.** It is easily possible to construct an epenthesis system where e.g. *map.tik.* and *maptk.* compete for optimality (Bruce Hayes, p.e.). Markus Hiller (p.e.) notes that a deletion system is also predicted, mapping */maptik/* → *.maptk.* to remove a closed syllable.

(51) But it is empirically hopeless to expect that **.maptk.** can ever win over **maptik** on the grounds that it has only **one** closed syllable where **map.tik.** has **two**.

(52) **MDT**. Rating **.maptk.** ≻ **map.tik** runs afoul of the Markedness Domination Thesis (20).
If there is a scale V. ≻ VC. ≻ VCC. ≻ ..., we are trading *two* betters for *one* worse.

(53) **Diagnosis**: loss of scale distinctions. Inclusion constraint $*C]_σ$ = V. ≻ {VC., VCC., ...} loses sight of the distinctions among the lower orders.

(54) **Parallel: F case**: 'Majority Rule'. (Lombardi 1999, Baković 1999bc). A dominance harmony system running on AGREE using symmetrical IDENT is predicted to be sensitive to the *ratio* of +α to −α in the input!

	AGREE(bck)	IDENT(bck)	Remarks
a - e - e → ***e*-e-e**		*	a→e *once*
a-*a*-*a*		**	e→a *twice*
a - e - a → **a-*a*-a**		*	e→a *once*
e-e-*e*		**	a→e *twice*

(55) Problem: IDENT(α) loses sight of the distinction between +α→−α and −α→+α.

(56) **Possible resolutions**:
a. Abandon freely-ranked inclusion constraints for fixed-rank element hierarchies.
b. Variant of (a). Impose some version of EC/PIPP as a meta-condition on ranking.
PIPP/EC is a formalistic intrusion in a system which already has a precedence-determining mechanism
c. Develop a different theory of evaluation of multiple violations, perhaps localistic one-by-one comparisons, in favor of lumping all violations for form.
d. Develop the theory of constraints, with scalar evaluation, rather than additive lumping, *within* constraints. So that $\langle *C]_σ \rangle$ = NOCODA e.g. would still rate CC. as worse than VC., independent of numerosity.

(57) **Remark**: total descriptive equivalence of (a) and (b):
Fixed Paninian ranking of inclusion constraints ≡ Fixed ranking of element constraints.
So with fixed ranking, the difference between the two conceptions becomes slight.

(58) The element hierarchy *c >> *b >> *a .... ≡ *c >> *{b,c} >> *{a, b, c}
so long as $x \cap y = \emptyset$ for $x,y \in$ {a,b,c,...}.

Why? Consider *b>> *a vs. *b >> *{a,b}.

	*b	*a	*{a,b}
1. $a^m b^n$	n	m	n+m
2. $a^p b^k$	k	p	k+p

2 cases:

•If n<k, candidate (1) **wins on *b.** If n>k, candidate (2) **wins on *b.** *The formulation of *a, *{a,b} is irrelevant.*

‣ If **n=k** then *n*+**m** > *k*+**p** is the same as *n*+**m** > *n*+**p** and it holds iff m > p (etc.).

	*b	*a	*{a,b}
1. $a^m b^n$	n	**m**	n + **m**
2. $a^p b^k$	n	**p**	n + **p**

I.e. When the decision is passed down the hierarchy by virtue of a tie on *b, the relation of m to p, examined by *a, is the same as the relation of n+m to n+p, since k=n.

Probe Question: why then isn't *{a,b} >> *{a} equivalent to *{a,b} >> *{a,b} ?

(59) **Proposal**: **Internal Domination**. To eliminate the possiblity of AP ranking, we must eliminate the possibility of a tie on G.

Suppose, given a scale $\langle a_i, > \rangle$ on a set of elements a_i, we construct every possible *compound constraint* joining any of the *a_i 's by >>. such that the resulting compound constraint *respects the scale relations.*

t ≻ k ≻ p ≻ q

[*q]	tkp ≻ q	Least Stringent	'Special'
		↓	↓
[*q>>*p]	tk ≻ p ≻ q		
[*q>>*p>>*k]	t ≻ k ≻ p ≻ q	Most Stringent	'General'

These compounds are then the constraints in CON embodying the scale. *Let them be freely ranked.*

NB: Given this scale, [*p] in isolation is not a possible constraint, because it says q≻p.

(60) Speculative Extension to Faithfulness. If we assume that the key assertion of F(α) is α→α, then with a scale α≻β, we will also want *α-from-/α/)* ≻ β-*from-/β/*. So *β>>*α then correlates with F(α)>>F(β).

I.e. *m >> *u goes with F(u)>>F(m), as desired in (7) , for u=unmarked, m-marked.

(61) **Multiple violation.** If scalar constraints are as in (59), the multiple violation problem (48) disappears, by virtue of the properties of strict domination (exactly as in the familiar fixed-ranking hierarchy treatment). Since the 'general' constraint is now [*CC. >> *C.], any occurrence of CVCC will be fatal if the alternative only incudes CVC.

(62) Resolution of Multiplicity problem.

maptk →	G = [*VCC. >>*VC.]		S = *VCC.
map.tik.		**	
maptk.	*		*
map.tik ~ .maptk.	W	L	W

(63) Majority Rule No Longer. If ‘Ident(α)’ = [IDENT(−α)>>IDENT(+α)] when we are given *[+α]>>*[−α]

	AGREE(bck)	[IDENT(−bck)>>IDENT(+bck)]		Remarks
e - a - a → ☞ **e-*e*-*e***			**	a→e *twice*
a-a-a		* !		e→a *once*
e - a - e → ☞ **e-*e*-e**			*	a→e *once*
a-a-*a*		*! *		e→a *twice*

(64) Using domination-compounds as n-ary constraints with free ranking is precisely equivalent to fixed domination hierarchies in the sense of P&S 1993. Why might we prefer this formulation? One good reason: if we can find other uses of internal domination to define constraints, and other consequences of interpreting, say, Ident(±α) as a domination compound.

(65) Two further consequences:

A. Ability to define minimal violation of a constraint over two or more dimensions.

B. Restrict the range of F(−α), F(+α) constraint pairs.

(66) **Tesar’s problem**. Imagine a stress system with strictly bisyllabic trochees with rightmost mainstress. Now suppose that in addition a foot always appears initially (Cf. Polish with the opposite ranking):

ALIGN(PrWd,F,L) >>ALIGN(PrWd, Hd,R).

We predict the following:

(σ́σ)
(σ́σ)σ
(σ̀σ)(σ́σ)
(σ̀σ)σ(σ́σ) ...
(σ̀σ)σσ(σ́σ)

Pattern: mainstress is penultimate, *except in trisyllabic words*. Unattested, I believe.

•Attested edge foot patterns are like Polish: main always penultimate, with an initial foot when there’s space:

***Lú**blin, re.**pór**ter, **prò**pa.**gán**da, **sàx**o.fo.**nís**ta,...* (Rubach & Booij 1985)

•Or initial always main, as in Garawa (Furby 1974)

***yá**mi, **púnj**a.la, **wát**^{j}im.**pà**nu, **ká**ma.la.**rìn**ji, ..., **ná**ri.ŋin.**mù**kun.**jì**na.**mì**ra.* eye, white, armpit, wrist, at your own many’

•Or always antepenultimate when allowed - as roughly in English:

***cí**ty, **ó**pera, psy.**chó**logy, **Phì**la.**dél**phia*: at least the choice is not determined by word length.

(See extensive survey in Hayes 1995. p. 198-205.)

(67) **Solution**: there is no constraint ALIGN(PrWd,*F*,E). Only Alignment of *Head*, with nonhead as minimal violation. ALIGN(PrWd,*Hd*,R)>>ALIGN(PrWd,*Hd*,L) .

(68) But ALIGN(PrWd,*Hd*,E) admits of two dimensions of violation:

• The foot thus aligned may be distant from the edge E.

• The foot thus aligned may not be maximally prominent in PrWd.

(69) Given the dominance of final Hd alignment, the choice for ALIGN(PrWd,*Hd*,L) is thus between e.g.:

σσσ(σ́σ) foot is indeed *Hd*, but not initial.

(σ̀σ)σ(σ́σ) 1st foot is indeed initial, but not *Hd*.

(70) Resolved if we regard "ALIGN(PrWd,*Hd*,L)" as a composite under local domination:

∀PrWd ∃F [ALIGN(PrWd, F, L)>>HD(F,PrWd)]

Align-F thus never loses sight of the will to headship (Hd(F)

(71) **Range limitations**. Even in F(u)>>F(m), F(u) may not roam free.

(72) "Contrast only allowed in environment favoring neutralization".

*si , *š, *s, IDENT(s), IDENT(š)   IDENT(s) = IDENT(+ant) = unmarked: *š>>*s

Consider: IDENT(s) >> *si >> *š >> IDENT(š), *s

s →s everywhere	IDENT(s)
ši → ši	(*si >> *š, so *si* ≻ *ši*)
š →s elsewhere	(*š>>Ident(š)

System: **sa, se, so, su**,	**si**
**ša, *še, *šo, *šu*	**ši**

Result: s & š contrast only in the environment most conducive to their neutralization!

(73) We have IDENT(u)>>IDENT(m), from (7). But IDENT(u) *must not be allowed to roam free.*

(74) Ergo, "IDENT(u,m)" = [IDENT(u)>>IDENT(m)].

(75) **Conclusion**. Strict domination interacts with the formal structure of constraints to predict general linguistic patterns. If we wish to obtain such large-scale properties as Harmonic Completeness and the Markedness Domination Thesis, we are compelled to certain assumptions about constraint structure.

In particular, we derive 'special' 'general' interactions from an understanding of the way that linguistic scales give rise to systems of formal constraints.

References (partial)

Aissen, Judith. Markedness and Subject Choice in Optimality Theory. NLLT 17.4, 673-711.

Alderete, John. 1999. *Morphologically governed accent in Optimality Theory*. Ph.D. dissertation, UMass Amherst. ROA-309, http://ruccs.rutgers.edu/roa.html.

Baković, Eric. 1999a. Deletion, insertion, and symmetrical identity. ROA-300. Harvard Working Papers 6.

Baković, Eric. 1999b. Assimilation to the unmarked. ROA-340.

Baković, Eric. 1999c. *Harmony, Dominance, and Control*. Ph.D. Dissertation, Rutgers University, New Brunswick. ROA-360.

Beckman, Jill. 1998. *Positional Faithfulness*. Ph.D. Dissertation, UMass, Amherst. ROA-234.

Carlson, Katy. 1997. Sonority and Reduplication in Nakanai and Nuxalk (Bella Coola). ROA-230. ESCOL.

Furby, Christine. 1974. *Garawa Phonology*. Pacific Linguistics, Series A. ANU.

Green, Tom. 1993. The Conspiracy of Completeness. ROA-8.

Halle, Morris. and William J. Idsardi.1997. Boston r. D&C: the Roca volume.

Hayes, Bruce. 1995. *Metrical Stress Theory*. U. Chicago Press.

Horwood, Graham. Antifaithfulness and truncative morphology. Ms. Rutgers University, New Brunswick.

Kenstowicz, Michael. 1994. Sonority-driven Stress. ROW-33.

Kiparsky, Paul. 1973. Elsewhere in Phonology. In S. Anderson and P. Kiparsky, eds., *A Festschrift for Morris Halle*.

Kiparsky, Paul. 1993/1994. Uncirculated Handout from ROW-1/TREND.

Lombardi, Linda. 1999. Positional faithfulness and voicing assimilation in OT. *NLLT* 17: 267-302.

Prince, Alan. Elsewhere & Otherwise. ROA-217.

Prince, Alan. In prep. Paninian Relations. Ms. Rutgers University.

Prince, Alan and Paul Smolensky. 1993. *Optimality Theory: Constraint Interaction in Generative Grammar*. RuCCS-TR-2, Rutgers Center for Cognitive Science, Rutgers University. http://ruccs.rutgers.edu/publicationsreports.html.

Rubach, Jerzy and Geert Booij. 1985. A Grid Theory of Stress in Polish. Lingua 66, 281-319.