Endogenous Constraints on Optimality Theory

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0. Course Outline.

(a) The focus of the course will be on properties of grammatical mappings under OT. Topics include:

1. Thematic Issues.
2. S/W process pairs.
3. Anti-constraints, deactivation, stringency, Paninian and Anti-Paninian relations.
4. Chain-shifts and mapping.
5. Harmonic Completeness.
6. Prosodic Morphology — TETU, BC, and GTT.

(b) Presuppositions. Some familiarity with the techniques and methods of Optimality Theory (as developed in Prince & Smolensky 1993, McCarthy & Prince 1993 etc.) will be presupposed, as will some experience with constructing and evaluating OT analyses.

1. Thematic issues

(1) What can we know of, hope for, a theory, just from knowing *the kind of theory that it is*?
These are *endogenous* constraints on the theory.
E.g From OT architecture, what can conclude about the nature of CON?

(2) **Endogeny**: gradient: shape of theory ⇒ what should be inside it.
architecture + theoretical prophylaxis (endogeny)
architecture + weak assumptions about constraint form ↓
architecture + stronger assumptions about general constraint form ↓
architecture + particular assumptions about particular constraints (maximal exogeny)

(3) **Exogeny** , an example — reduplicative infixation property. Depends on specific content of specific constraints.
Timugon Murut (Prentice 1971, Broselow & McCarthy 1983-84, McCarthy & Prince 1986, 1993):

a. **BU**-bulud	bulud	'hill'
b. u-**LA**-lampoy	ulampoy	*unknown*
c. om-**PO**-podon	ompodon	'flatter'

"Put prefix *after* 1st syllable in V-initial stem (b,c) ". Onset >> Align(AF_k, L, Stem, L)

(4) *u–la–lampoy* /RED + lampoy/

Candidates	ONSET	LEFTMOST
u.u.lam.poy	** !	
☞ u.la.lam.poy	*	u

Result: Such a pattern of infixation can only be reduplicative (M&P 1993:132).

(5) **Infixation Theorem**. Under OT & MP-1993 CON, infixation after an onsetless initial syllable *can only be* reduplicative.

Sketch of Pf. We need only exhibit one kind of #V...# structure in which we cannot compel infixation. This means that a general map Af+.VX.Y → .V-Af-XY cannot be represented.

Consider #VC…#. No segmental prefix α can be compelled to position as #VαC....#

•If α = v~c infixation adds an Onset violation and a NoCoda violation
#⋆v~c-VC… vs. #⋆V-⋆v~c ⋆-C…
•If α = v~v infixation trades 2 Onset violations for 2 more.
#⋆v~v-⋆VC… vs. #⋆V-⋆v~v-C
•If α = c~c infixation violates Onset & NoCoda
#c~c-VC… vs. #⋆V-c~c⋆-C…
•If α = c~v infixation trades one Onset violation for another
#c~v-⋆VC… vs. #⋆V-c~v-C

Observe that this last **requires** that ONSET handle all hiatus (V⌒V) cases. *There must be no* *VV ∈ CON, else we can compel e.g. TA+opi → oTApi .

(6) Endogeny I. Universality of CON & Factorial Typology is strong commitment — difficult to live with, at best.

(7) Endogeny II. We can say more, though: Underlying Doctrine: Maximal use of resources.

(8) Some endogenous imperatives:
a. OT implies at least some parallelism of evaluation: so go all out for parallelism.
b. OT does neutralizing mappings through Markedness/Faithfulness interaction:
∴ no constraints on input. Derive character of input from effects of M/F Grammar.
c. OT gives interactive suppression of a constraint's effects through domination:
hence no further mechanism of constraint removal (simple omission)
hence less interesting to have simple opposites ≈ parameters.
c. OT expresses a variety of interactions through domination relation *between* constraints:
∴ No constraint-internal logic that mimics effects typical of the domination relation:
E.g. no reference to "except when" inside constraints
Not possible, then: "Syllables have onsets, *except when* phrase-initial"
e. OT works through optimization/competition over a hierarchy:
∴ No constraint-internal reference to "markedness" or competition.
No C-internal reference to *complexity, maximization, minimization, default, marked structure, unmarked structure...* All these are independently computed by separate constraints and their interaction.
f. OT works with M/F constraints to achieve mappings between representations.
∴ No "antifaithfulness" constraints ≡ "violate at least one F-constraint" (Smolensky, Yip)

(9) What types of constraints should one have, under (6)?
a. Universality — No absolute responsibility for shape of constraint: axioms.

b. Constraint formats — even under (a), deepen theory, support existence of general properties.

c. Mechanisms for generating constraints from data (cf. SPE, Aspects). *Must* have account of what constraints are possible, and *when* generated from data.

(10) Mapping questions:

Q1. What basic mappings can you have at all?

Q2. What basic mappings can co-exist in a single hierarchy?

This depends jointly on nature of constraints & nature of allowed interactions.

2. Strong and Weak Process Pairs

(11) Background: Maps as rule-packages.

$A \rightarrow B / C \_\_ D$

(12) Classic Shortcomings: (a) examines input configuration rather that output result, (b) traps the constraint *CAD in a closed package with $A \rightarrow B$, but often enough *CAD is visible in whole or in its constituent parts in other maps in the grammar (cf. Kisseberth) (c) such maps typically apply *minimally*.

(13) OT liberates the SD from the SC. Constraints then interact broadly with each other with they take their places in a strict-domination hierarchy. What does it take to obtain a map $A \mapsto B$ under OT? Necessarily —

$\exists$M, a markedness cstrt, $\exists$F, a faithfulness cstrt M(*CAD) >> F(A,B)

But other conditions must prevail as well. ***What are they?*** (Useful question for participants to chew on.)

(14) Suppose a grammar contains two processes defined by breach of the same faithfulness constraint F.

P1: T1 >> F , P2: T2 >>F

(15) By the hypothesis of (2), that a grammatical ranking imposes a total order, we must have either

T1>>T2 or T2>>T1. Say (wlog) the first.

(16) Then the two processes combine in the grammar as

T1>>T2>>F.

(17) This leaves 2 very distinct niches for the imposition of further restrictions on the processes:

B1>>T1>>**B2**>>T2>>F

(18) ♦But now we get **B1**>>T2 as well as **B2**>>T2 .

So P2 falls both under its own proper restrictions and under those of P1.

P1 is stronger, in the sense it falls *only under* **B1** (and T1).

(19) ■ ***All such pairs must be related in this way***.

(20) Example: Lango ATR harmony (rule analysis from Archangeli & Pulleyblank 1994).
5 related ATR spreading processes, 2 Rightward→, 3 ←Leftward. We show 4.

R→ Local	R→ Distal
ATR..... V C V free	ATR..... V C C V **Hi** source: **Hi**
←L Local	**←L Distal**
.....ATR V C V **Hi** source: **Hi**	.....ATR V C C V **Hi** **Hi** source: **Hi** target: **Hi**

(21) These are all related in the sense of (13). They all involve violation of one and the same faithfulness constraint: *(RTR~ATR), IDENT-RTR, "An RTR vowel in the input corresponds to an RTR vowel in the output, not an ATR vowel."

(22) Observe the accumulation of limiting constraints as we proceed from the upper left to the lower right of the table. Separating Locally and Distally Spread structures, we have, crudely expressed:

"Spread R→/Local"
|
"Source(Hi)"
|
"Spread ←L/Local"
|
*(RTR~ATR)

"Source(Hi)"
|
"Spread R→/Dist"
|
"Target(Hi)"
|
"Spread ←L/Dist"
|
*(RTR~ATR)

(23) Notice how this exploits the promise of liberating SD from SC in the rule-package. The constraint "Source(Hi)" blocks three distinct processes by virtue of its place in the hierarchy.

(24) **Remaining Issues**.

a. Unification of the two subhierarchies is left to the auditor/lector.

b. Actual formulation of the scare-quoted constraints. On this, see Kirchner 1993, Cole & Kisseberth 1993 et seq., Smolensky 1993, Archangeli & Pulleyblank, Smolensky (this event).

c. The Local /Distal distinction. See Smolensky 1994 on Constraint Conjunction.

d. The 5th Column. The final distal ATR process spreads FROM [Hi, Back] over CC TO any vowel . This doesn't fit anywhere in the hierarchy. It doesn't pass on its Source(Back) restriction to Spread ←L/Dist, nor does it inherit the Target(Hi) restriction. So it sticks out as a NON-subsettable condition on a spreading process. (See Archangeli & Pulleyblank 1995 for discussion from another p.o.v.)

(25) Abstracting away from (7)c, Lango illustrates the Strong-Weak differentiation among processes that is an inevitable consequence of superimposing F-related maps in a domination hierarchy.

Because the domination ranking is a total order, one or the other of the major triggering constraints must be lower ranked.

The lower ranked constraint T2 can have its own blockers which are dominated by the higher-ranked trigger T1 and which therefore do not affect the process T1>>F.

But any blocker for T1 is, by transitivity, also a blocker for the process T2>>F. So T1>>F is stronger, freer, less restrictable than T2>>F .

(26) Literature. Observation of this property first arose in the context of analysis of Davis's 1995 remarks on the relevance to OT of various Palestinian pharyngeal harmonies. See McCarthy 1997 for examination and full analysis of these cases.

§3. Chain Shifts & Coexistence

(27) **Chain-Shifts.** /a/ ↦ b, /b/ ↦ c, ..., *etc*. Ex.

a. Bedouin Arabic Vowel Raising & Loss (McCarthy 1993, Kiparsky 1994)
/a/ ↦ i, /i/ ↦ Ø (in nonfinal open syllables)

b. Finnish Consonant Gradation (noninitial, _VC.)
/tt/ ↦ t , /t/ ↦ d

c. Nbɛzi Vowel Raising (Kirchner 1996)
/a/ ↦ ɛ , /ɛ/ ↦ e , /e/ ↦ i (before certain suffixal -i)

(28) **General Format**: a ↦b, b ↦ c . *Question:* how could these coexist in the same hierarchy?

Loose Line of Thought (LLT): a ↦ b implies **a** ≺ **b**. And b ↦ c implies **b**≺ **c**.

So **a** ≺ **c,** *and we should have instead* a ↦ c .

(29) What's right about LLT. Under very general conditions, if G: a ↦ b, then **a**≺**b** (with respect to the hierarchy of Markedness constraints within G).

(30) **Harmonic Ascent in F/M-OT mapping**. If G: a ↦ b, then **a**≺**b**, (a≠b). (Moreton 1996)

Assume that there is a completely faithful candidate. (As, e.g. if {◇inputs}={◇outputs}.)

Assume that there are only Faithfulness and Markedness constraints (M/F-OT).

•Consider the map a↦a. It is completely faithful, unlike a↦b.

•If a↦a loses to a↦b, it can *only be* on grounds of Markedness: a ≺ b .

(Indeed, there must be a Markedness constraint M preferring **b** to **a** that dominates **all** of a↦b's Faithfulness violations. Note that a↦a has no F-violations to do the work of dominating a↦b's F-marks .)

(31) **Moreton's Thm.** There are no circular chain shifts in M/F-OT.

Pf. If a↦b ↦c ↦...↦z, then by HA (13), a≺ b ≺ c ≺ ... ≺ z. So z ≠ a !

(32) **Q**: But, given HA, how do we have any chain shifts at all?

(33) **ANS**: The following crude picture portrays necessary conditions the existence of any map:

*a '*some* constraint disfavoring a wrt c'

/ \ dominates

{*c} {F_i(a,c)} *every* M-constraint against c and *every* F-constraint against a↦c.

/a/	*a	{*c}	{F_i(a,c)}
a↦a	*!		
☞ a↦c		*	*

(34) In short, a successful map a↦c requires not only a≺c, but also that *every* Faithfulness constraint F_i(a,c) militating against a↦c be subordinated appropriately.

To see this, imagine an escaped F(a,c) dominating the highest *a.

/a/	...	F_k(a,c)	*a	*c	...
☞ a↦a	...		*		...
a↦c	...	* !		*	...

(35) **Chain-Shift Criterion.** For there to be a chain-shift a ↦b, b ↦ c , there must be at least one Faithfulness constraint F_i(a,c), dominating {*b} and {F(a,b)}. (where {C} = every constraint of type C.)

Pf. We know a≺ b≺ c. So **a↦b** cannot win by virtue of Markedness. Its failures {*b} will kill it vis-a-vis a↦c, unless they are dominated. By what? Some F(a,c) is the only hope. Similarly, the failures {*F(a,b)} of a↦b will be fatal vis-a-vis a↦c without the domination of **F_k(a,c)**:

/a/	*a	**F_k(a,c)**	F_i(a,b)	*b	*c
a↦c		***!**			*
☞ a↦b			*	*	

(36) Schematically, to successfullysuperimpose a ↦b , b ↦ c in one hierarchy, we must have —

*a, F_k(a,c)
/ \
{*b} {F(a,b)}
/ \
{*c} {F(b,c)}

(37) **Antifaithfulness.** Neither Moreton's result nor the Chain-shift Criterion holds when antifaithfulness is introduced: F(a,a) = "do not map a to a". To see this, consider the following example: a↦b, b↦a. The language is {a,b}, and Gen(a) = Gen(b) = {a,b}.

/a/	*a↦a	*b	*a	*...whatever*
a↦a	*!		*	...
☞ a↦b		*		...

/b/	*a↦a	*b	*a	*whatever...*
b↦b		*!		...
☞ b↦a			*	...

(38) **No guarantees.** To have the shift, F(a,c) must exist and be separately rankable.
Although constraints with the effect F(a,c) surely exist (else, given a≺c, **a** will simply disappear in favor of **c**), they need not be distinct from e.g. F(b,c).

(39) **Yupik** (Baković 1996, Hayes 1995)
$\sigma_{\mu} \mapsto \sigma_{\mu\mu}$, $\sigma_{\mu\mu} \mapsto \sigma_{\mu\mu\mu}$ (in the head of a dissyllabic iambic foot)
If RHYTHMIC HARMONY compels lengthening in this circumstance, then DEP(μ) or *μ or WEIGHT-IDENT should be multiply violable to achieve the ultimate length. To stop it, we'd need F(μ, μμμ) in the dominant position required by the CSC (16).

(40) Antifaithfulness. Baković's solution involves antifaithfulness:
FtHarm: For every disyllabic foot G, increase H(G). (The harmony of G).
Any increase in harmony (= lengthening of iambic head) satisfies the constraint. Therefore, the degree of lengthening is controlled by the one Faithfulness constraint.

(41) Baković's Iambic lengthening: FTHARM >> DEP-μ

/CVCV/	FTHARM	DEP-μ
$(\sigma_{\mu}\ \sigma_{\mu})$	*!	
☞ $(\sigma_{\mu}\ \sigma_{\mu\mu})$		*
$(\sigma_{\mu}\ \sigma_{\mu\mu\mu})$		**!

(42) Kirchner (1996) proposes that the relevant F-constraints **do** exist — by virtue of *Local Conjunction* (Smolensky 1993): here [DEP-μ & DEP-μ]. Above Ident(ATR) & Ident (Lo), Ident(ATR) & Ident(Hi), and phps. Max-μ & Ident(Voi). Gnanadesikan 1997 explores another avenue of attack via the representational theory. McCarthy (1997, this event) develops a novel line on enriching the notion of Faithfulness.

(43) **Conclusion**: The intrinsic structure of M/F-OT places strong limitations on the coexistence of maps within a single hierarchy. Chain-shift phenomena in which the blocking "F(a,c)" cannot be separately distinguished require exploring new vistas that affect fundamentals (rather than incidentals) of the theory.

§4. Reduplicative Identity (McCarthy & Prince 1994, 1995, to app.)

(44)Thematic Issue. We examine *two* **B**ase ⇌ **R**eduplicant Maps, both turning on B-R identity.
a. Template Defining: how much of **B** does **R** take when not all? (and what does R do with it?).
b. Overapplicational. Phonology expected only in **B** (**R**) is transferred to **R** (**B**).
We show that these two can be *crucially incompatible*.

(45)What is Reduplication? The Basic Model (McCarthy & Prince 1993, 1995)

Input: /Af_{RED} , Stem/
↑↓ ⟨*I=O*⟩
Output: R ⇄ B
⟨*R=B*⟩

(46)(47) **Key elements of Correspondence** constraint system. (S_1, S_2)
Faithfulness, via correspondence, atomizes the monolithic demand $S_1 = S_2$.
‣MAX: $\forall x \exists y$ segment $x \in S_1 \rightarrow y=corr(x) \in S_2$. "No Deletion from S1 to S2."
‣IDENT(Feat): feature *f* holds of seg. $x \in S_1 \leftrightarrow$ feature *f* holds of $corr(x) \in S_2$.
NB: need to distinguish → and ↔ versions of IDENT,...feature-dependent?
• We have MAX-**IO** and MAX-**BR**, IDENT-**IO** and IDENT-**BR**, etc.

(48) **The Emergence of The Unmarked:** F/IO>>C>>F/BR (McCarthy & Prince 1993b)
Gloss: **F/IO>>C** means no general solution to C, no relevant process, C violated in lg. at large.
But! **C>> F/BR** means that (the anti-markedness constr.) C *is* satisfied in the reduplicant.

(49) Example. Reduplicant must be open syllable, although closed syllables are allowed in lg.
MAX-IO>>NOCODA "Don't delete to avoid a closed syllable."
NOCODA>>Max-BR "Have incomplete copying to avoid a closed syllable"

/RED+takder/	MAX-IO	NOCODA	MAX-BR
☞ TA - tak.der.		**	**** (kder)
TAK- tak.der.		*** !	*** (der)
TA - ta.de.	**! (...k...r)		

(50) TETU yields template-like restrictions through constraint enforcement. Hypothesis: *all* templatic restrictions follow from TETU: there are no templates.

Given that each morpheme must specify its category (Root, Affix, — Stem, etc.) and given that these *morphological* categories have typical *phonological* realizations, we come to the Generalized Template Hypothesis:

The Reduplicant is the Canonical Structural Realization of its morphological class.
The "Canonical Structural Realization" (Grimshaw's term) is attained through TETU.

(51) For background and further kinds of evidence of the correctness of this stance, see at least Downing (1994, 1995ab, 1996), Itô & Mester (1992), McCarthy & Prince (1994, 1995, to app.), Futagi (1997).

(52)"MinWd" through TETU. Rather than recognize a "template" MinWd, to which a reduplicant must conform, we interpret "MinWd" as the ***canonical prosodic word*** — the one that *meets* all the constraints.

(53) These requirements are, crucially (PROSOD)
Parse-σ. All syllables belong to Feet.
Ft-Bin. All feet are binary.
All-Feet-Left. All feet occur at the left edge.
All-Feet-Right. All feet occur at the right edge.

(54)The only structure satifying them all is [*PrWd* [*Ft* σ σ]]

(55) With MAX-**IO**>> PROSOD, there's no deletion of input material to achieve monopod perfection.
With PROSOD>>MAX-**BR**, perfect copying is sacrificed on the altar of prosody. E.g. Diyari

MAX-IO
|
PARSE-σ
| } PROSOD
ALL-FEET-LEFT
|
MAX-BR

(56) Domination of BR-Identity by PROSOD

/RED + tʲilparku/	MAX-**IO**	PARSE-σ	ALL-FT-LEFT	MAX-**BR**
a. ☞ [(tʲílpa)]-[(tʲílpar)ku]		* (ku)		*** (rku)
b. [(tʲílpar)ku] - [(tʲílpar)ku]		**!(...ku...ku)		

(57) **Conclusion**: With MAX-BR subordinated to phonological constraints, incomplete copying is recruited to obtain better satisfaction of the superordinate constraints. This is TETU: and gives the "MinWd" Template here.

(58) **Overapplication.** What if FAITH/**BR** is dominant over some structural C that is respected in the lg. at large? Then it can happen that the reduplicant shows unusual phonology merely to look like the base. And vice-versa! — the base can show unusual phonology to look like the reduplicant.

(59) Madurese Reduplication. Nasal vowels only after a nasal, but free-standing in Reduplicant!

/neat/	**ỹãt**–nẽỹãt	'intentions'	***ỹãt** qua word.
/moa/	**w̃ã**–mõw̃ã	'faces'	
/maen–an/	**ẽn**–mãẽn–ãn	'toys'	

/N–soon/	**ɔ̃n**–ñɔ̃ʔɔ̃n	‘request (verb)’
/soon/	ɔn–sɔʔɔn	‘request (noun)’

(60) This is a FAITH/BR effect. IDENT(nas)/**BR** >>*NASAL-VOCOID (ID-BR forces extra Nasal-V’s)

(61) Background Phonology. *NASVOCOID>> IDENT(nas)/**IO** (Nasal vocoids are denasalized except that..

$*NV_{oral}$ >> *NASVOCOID (postnasally, must have a nasal vocoid)

(62) **Malay**. Same nasalization pattern, but spread crosses B/R boundary.. May be **back-copy** from Reduplicant to Base, if structure is B+R.

tahan		‘withstand’
mɐ̃wãh		‘prosperous’
mə̃nãhãn		‘withstand’ /mən – tahan/
pəsamãmãʔãn		‘the same’
kəsuñĩyãn		‘stillness, quietness’

(63) Nasal spreads across B,R–juncture. And is **back-copied** to non-nasal environment!

waŋĩ	w**ãŋ**ĩ–wãŋĩ	‘fragrant/(intensified)’
aŋãn	**ãŋ**ãn–ãŋãn	‘reverie/ambition’
aŋẽn	**ãŋ**ẽn–ãŋẽn	‘wind/unconfirmed news’
hamə̃	h**ãm**ə̃→hãmə̃	‘germs/germs’
	↑.....↓	

(64)Malay Back Copy (sketch)

/waŋi–RED/	$*NV_{oral}$	IDENT/ **BR**(nas)	$*V_{NAS}$	IDENT/**IO**(nas)
a. ☞ **wãŋ**ĩ–wãŋĩ			****	**
b. **wa**ŋĩ–wãŋĩ		* !	***	*
b. **wa**ŋi–waŋi	*!*			

(65) **Back-Copy Ranking Scheme**: FAITH/**BR** >> C >> FAITH/**IO**

Remark: as in the tableau, FAITH/BR forces extra violations of both C and FAITH/IO.

(66) Another famous old example (Bloomfield):

Tagalog /paŋ+putul/ => pa**m**utul. But /paŋ + RED + putul/ => pa-mutul-**m**utul

Same basic analyis: IDENT(features)/**BR** >>***NAS^Voiceless** >>IDENT(nas,etc.)/**IO**

(67) Similarly, Southern Paiute. /w/ shows up initially; between vowels you get /ŋʷ/

waʔaŋi tï˙′– **ŋʷ**aʔaŋi ‘to shout/to give a good shout’

▲ ▲

(68) But in Reduplication, the Base imitates the Reduplicant --

a. *Differing Context in R and B*: BR identity => B back-copies R

wïn˙nai– **w**ï – **w**ï′n’nai– ‘to throw/several throw down’

***ŋ**^{w}ï – **ŋ**^{w}ï′n’nai– (R copies B to excess)
***w**ï – **ŋ**^{w}ï′n’nai– (normal phonology; bad BR-Faith)
▲ ▲

b. *Same V–V Context in R and B.* BR identity + normal phonology
wïn̥ɪ– ya– **ŋ**^{w}ɪ′–**ŋ**^{w}ïn̥ɪx̱aˁ ‘to stand/while standing and holding’
▲ ▲ (normal phonology)

(69) **CRISIS!?** The Philip Hamilton/René Kager Conundrum (HKC).
Templatic Conditions are never back-copied.
/RED + takder/ =/=> *ta-ta **!!**
/RED + wakari/ =/=> *waka-waka !! (Diyari)
/RED + sawatik/ =/=> *sa:-s**a:**watik !! (Nahuatl: ‘someone hoarse’)

(70) But, *if there are templates*, or indeed affix-specific constraints, this is easily accomplished.

(71) “RED=MINWD”, MAX-**BR** >>MAX-**IO** in Ψ-Diyari.

/RED+tʲilparku/	“RED=MINWD”	MAX-BR	MAX-IO
a. ☞ tʲilpa-tʲilpa			***(rku)
b. tʲilpa-tʲilparku		*** !	
c. tʲilparku-tʲilparku	* !		

(72)Unreduplicated forms receive a fully faithful analysis in Ψ-Diyari

/tʲilparku/	“RED=MINWD”	MAX-BR	MAX-IO
a. tʲilpa			*** !
b. ☞ tʲilparku			

(73) **But if Templatic conditions come always from TETU, with constraints of general applicability, this is impossible.**

(74) As above, “MinPrWd” comes from this:
FAITH/**IO** >> PROSOD >> FAITH/**BR**
Clearly, with FAITH/**IO** dominant, there can be no truncation of the Base to meet PROSOD or to accommodate the Reduplicant.

(75)Suppose we try to fit PROSOD through the Back-Copy Ranking (47).
a .The key element of the ranking is PROSOD >>FAITH/**IO**
b. But now, everything in the language conforms to PROSOD !

(76) TETU: violation of C in Lg-in-general // enforcement of C within R. (e.g Parse-σ)
BC: enforcement of C in L-in-general // violation of C in R context. (e.g. *NasVocoid)

(77) E. Keer: For this to fly, TETU must work by indexing Faithfulness-constraints to morphological domains, **not** Markedness constraints. Suppose to the contrary that F was general and M indexed.

PROSOD/R >>	GENERAL-FAITH	"PROSOD is enforced in R"
	GENERAL-FAITH >> PROSOD/ALL	"Elsewhere not so"

But:	PROSOD/R, **FAITH-BR** >> GENERAL-FAITH	"As above, but B=R"
	GENERAL-FAITH >> PROSOD/ALL	

■ Here FAITH-BR will cause violation of GENERAL-FAITH to achieve B=R by truncating B.

(78) Conclusion: **No emergent property of the reduplicant can every be back-copied**.

Assumptions: No M constraints refer only to affixes or parochially affixal structures.
Only F is indexed to morphology.

Corollary: if we are to preserve the FAITH/BR theory of reduplication & reduplicative identity, all "templatic conditions" must be emergent.

(79) We have examined three issues in the superimposition of basic maps in a single hierarchy:

a. The total-ordering property of Constraint Domination yields S/W process pairs, extending implicational markedness into a new domain.

b. F/M-OT strongly restricts the analysis of chain-shifts, defining the avenues of further exploration.

c. F/M-OT, with dimensional indexing of F to correspondence relations, and with limitation of Markedness constraints to certain kinds of generality, leads us to a strong theory of "templates" *(that there are none)* and reduplicative-identity effects on phonology, and intrinsically limits their interaction via a **non**superimposability result.

(80) **CONCLUSION.** *Das Ewig-Theoretische zieht uns hinan.* From a few scruples, and a few more, we have been led to broad conclusions about the way things are, and must be.

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