Representing Re-reduplication

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Overview

Raimy's dissertation argues for a new representational approach to reduplication to allow a strictly derivational model of phonology to account for reduplication..

- **Chapter one** provides a brief introduction.
- **Chapter two** gives a history of approaches to reduplication and the issues that they have.

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Rule Based Models

Three categories that define the investigation of reduplication as a morphological and phonological process:

- Formal representation of reduplication
- The interaction of reduplication and phonological rules
- Reduplicative templates

The strengths and weaknesses of previous approaches have guided Raimy's work in this dissertation.

Early Models of Reduplication

Chomsky & Halle, 1968 (SPE)

Voegelin & Voegelin, 1967 (Hopi)

Luelsdorff, 1968 (came very close to a fully specified generative account of redup)

Moyne & Carden, 1974 (syntax involved in subject reduplication in Persian w/ a rule considered first formal treatment of reduplication as a generative process) Note: This was a syntax paper!

- $X\ [NP_1\ VP]_S\ Y \Rightarrow X\ [NP_1\ NP_1\ VP]S\ Y$

From Chomsky's description in 1955, reduplication was understood as a **morphological** transformation with transformational rules akin to those in syntax.

In this case it would **precede all phonological rules**

But then in 1975 Wilbur investigates interaction between reduplication and phonological rules.

The SPE assumption would expect there to be little to no interaction but this did not seem to be the case.

Early Models: Wilbur 1973

The conclusion of this was that the assumptions made in SPE are not justifiable.

This comes from the interaction between reduplication and phonological rules leading to two types of ordering paradoxes (if one is to assume that reduplication precedes phonology).

These paradoxes come from:

- **Overapplication** when a phonological rule has applied before reduplication
- **Underapplication** when a phonological rule has failed to apply before reduplication

-The resulting opacity cannot be accounted for with the previous assumptions made about morphology, phonology and rule ordering.

Wilbur shows how this can be seen with Coalescence in Chumash:

- **Reduplication before coalescence**: the application of coalescence is unconditioned and unexplained.
- **Coalescence before reduplication**: the output forms are no longer exceptional.

*Wilbur refers to Chumash coalescence as aspiration

Early Models: Chumash in Wilbur 1973

A phonological rule must apply before reduplication to produce the correct output in Chumash.

Coalescence is a phonological rule and should come after reduplication. If this were the case then the output wouldn't make sense. Coalescence after reduplication produces the desired output.

$$\begin{bmatrix} C_1 \\ +\text{cons} \\ -\text{voice} \end{bmatrix} \rightarrow [+\text{aspiration}] \; / \; \_\_ \; \begin{Bmatrix} h \\ C_1 \end{Bmatrix}$$

Base	/s-soyin/	/ma-k-hatinet/
Reduplication	s-soy-soyin	ma-k-hat-hatinet
Expected	*s^{h}oy-soyin	*mak^{h}at-hatinet
Actual	s^{h}oy-s^{h}oyin	mak^{h}at-k^{h}atinet
Gloss	'it is very black'	'my joints'

Early Models: Carrier 1979

The claim is that reduplication is a **morphological** process best characterized by transformational rules.

The Identity Constraint proposed by Wilbur doesn't work for the given example in Tagalog.

The interaction of reduplication and syncope in Tagalog is not accounted for with ID constraint.

This argument is based on the assumption that morphological processes precede phonological ones.

In Tagalog, syncope must apply before reduplication to derive the proper form. (first foot of stem is duplicated)

Base	/sunud-in/	
Reduplication	sunud-sunud-in	
Syncope	sunud-sund-in	
IC + GR	sund-sund-in	*Example of overapplication*
Output	*sund-sundin	[sundin-sundin]

Early Models: Carrier 1979 cont.

Incorrect results when syncope rule:

Underapplies *sundun-sundun-in

Applies normally *sundun-sund-in

Carrier says that phonological rules that act exceptionally are actually morphological rules w/ evidence:

- based on exceptions to the phonological rules that seem to apply before reduplication
- reduplication is a unique operation in the lexicon.

Since syncope and nasal substitution do not apply uniformly and the speaker is forced to memorize when the rule does or does not apply,, Carrier considers them to be morphological processes.

Reduplication Rule proposed by Carrier 1979

W	$[_{STEM}$	$C_0V_1C_0$ (+)	V_2	C(+)	X	>>>	12	3	42345
1		2	3	4	5		[+lg]		

Early Models: Exceptional Rules in Tagalog

Syncope

sunud-in	sundin-sundin	‘obey/obey somewhat’

Compared with:

Linis-in	linis-linis-in	‘clean/clean a little’

Nasal Substitution

maN-putul	mamutol	‘cut’
maN-bilih	mamilih	‘shop’

Compared with:

maN-basah	mambasah	‘read’

These two rules are not fully productive in the phonology of Tagalog.

The application of the rules is determined on form by form basis.

*Morpheme maN- is subject topic marker

Early Models: Morphological Edges

Reduplication is a unique operation in the lexicon bc of the morphological sensitivity of some reduplication rules.

In Tagalog this sensitivity is **asymmetrical**:

sunud-in	sundin-sundin	‘obey/obey somewhat’
linis-in	linis-linis-in	‘clean/clean a little’
mag-linis	mag-linis-linis	‘clean/clean a little’

Reduplication is sensitive to morphological info at left side of form, but not right side of form.

Reduplication begins at left edge of stem but can continue into suffixes if particular shape requirements.

Early Models: Total Reduplication

The copy command must copy everything regardless of the structure of Cs and Vs, which is a problem for Carrier's rule because each form can have a different configuration.

Several different formulations of Carrier's reduplication rule would be needed and no generalizations would be made.

Carrier believes reduplication is best described a transformational rule and that overapplication and underapplication are cases of **allomorphy.**

Since there are no constraints in transformational rules, pathological reduplication patterns are overgenerated.

Raimy uses examples of unattested reduplication patterns to argue against Carrier's idea:

String Reversal 12345 → 54321-12345

Scrambling 12345 → 24315-12345

Doubling 12345 → 1122334455

Affix and Copy Approach

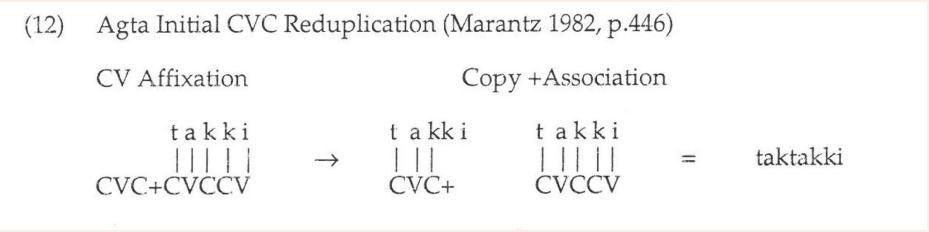
The main claim of this approach is the insight that **reduplication is a special type of affixation.**

Developed by Marantz in 1982.

Based on a **derivational system** of phonology.

How does reduplication differ from typical affixation?

- A bare CV skeleta is attached to the stem of the word.
- The bare CV skeleta is filled with melodic content from a copy of the base medley.
- Non-Associated melodic elements are deleted.



What are the consequences of this approach?

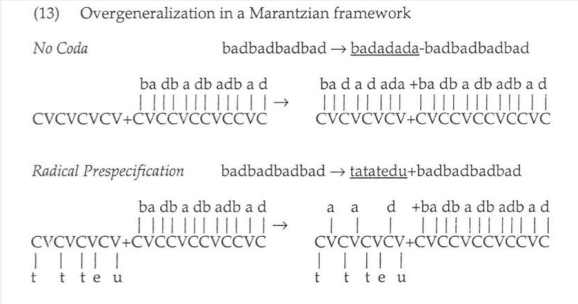
Affix and Copy Approach

Positives of the Marantzian approach:

- This approach is more constrained than Carrier 1979.
- String reversal, scrambling and doubling are not easily produced in this framework.

Negatives of the Marantzian approach:

- Does not add anything about the interaction between Phonology and Morphology.
- Other types of overgeneralization are produced.



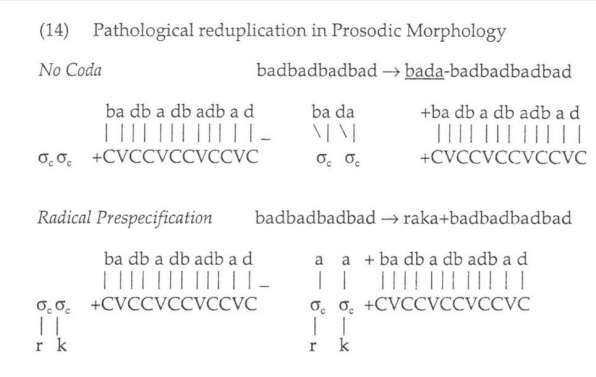
Prosodic Morphology

Developed by McCarthy and Prince 1986.- **In response to the overgeneration problem in Marantz approach.**

In this approach the CV skeleta are restricted to legitimate prosodic categories: Prosodic Word (Wd), Foot (F), Syllable (σ), monomoraic syllable, bimoraic syllable, and core syllable σ_c

By using prosodic categories the power of the copy and association model is limited.

However there are no restrictions on how these categories can be combined and illegitimate patterns are still produced.



Single Melody Models

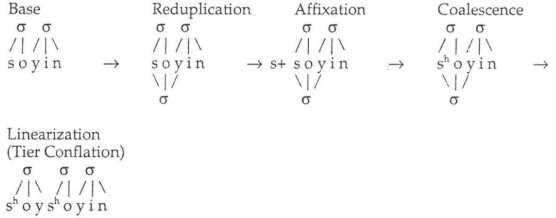
Single Melody models (Clements 1985, Mester 1986) **deny the copying effect of reduplication.**

In these models: reduplication is the affixation of a prosodic category into the melody of the base.

Instead of two planes of melody there are two separate planes of prosodic structure that go through a linearization process that puts the reduplicated prosodic category in some linear relation to the base.

An explanation for over and under application is the idea that the surface reduplicant and the surface base at a time during the derivation.

(15) Single melody analysis of Chumash coalescence (Mester 1986)



Issues with Single Melody Models

Some cases of overapplication cannot be accounted for.

The environment to trigger the /y→d/ rule is met after the single melody is split into two.

(16) Continuing inadequacy of rule ordering in Chuckchee

Possible Ordering 1

Base	Redup.	/y → d/	Linearization
yɪn	yɪn	---------	yɪnyɪn
	σ	Output	*yɪn-yɪn

Possible Ordering 2

Base	Redup.	Linearization	/y → d/
yɪn	yɪn	yɪnyɪn	yɪn-dɪn
	σ	Output	*yɪn-dɪn

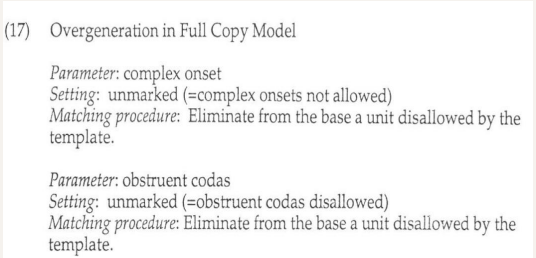
Full Copy Models

Steriade 1988 claims that **reduplication copies the entire form and then deletes part of it based on parameters to remove marked structure.**

Full reduplication in this model it is considered the default. And this is supported typologically by prevalence of full reduplication.

What's wrong with this model?

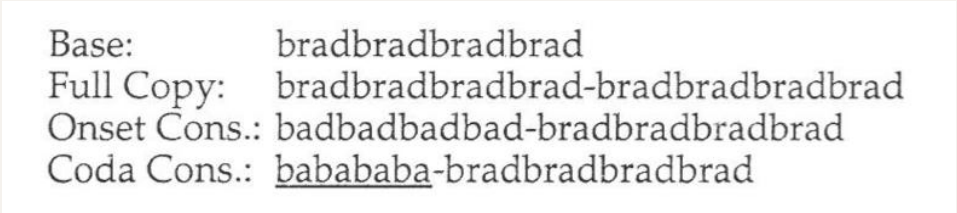
- Full reduplication is the most common pattern and this model predicts that the closer a model is to full reduplication the less marked it is and the fewer parameters are needed.
- CV reduplication requires 3 parameters: A weight parameter, complex onset parameter, and a coda parameter. And the full copy model would say that omitting the weight parameter is less marked.



(17) Overgeneration in Full Copy Model

Parameter: complex onset
Setting: unmarked (=complex onsets not allowed)
Matching procedure: Eliminate from the base a unit disallowed by the template.

Parameter: obstruent codas
Setting: unmarked (=obstruent codas disallowed)
Matching procedure: Eliminate from the base a unit disallowed by the template.



Base:	bradbradbradbrad
Full Copy:	bradbradbradbrad-bradbradbradbrad
Onset Cons.:	badbadbadbad-bradbradbradbrad
Coda Cons.:	babababa-bradbradbradbrad

Full Copy Models

In the example in the previous slide some additional constraints need to be placed between parameters.

Also full copy models require additional parameters are required to produce ‘unmarked patterns’.

Only certain aspects of reduplication are addressed.

Base transfer effects are addressed. These models also explain the tendency for reduplication to produce structures simpler than the base.

Overapplication and Underapplication of phonological rules are not addressed.

Summary of Rule Based Models

Three main aspects on reduplication have been focused.

- The information from Morphology flowing into Phonology that is needed to account for certain overapplication and underapplycation effects as result of allomorphy rules.
    - The Single Melody Approach goes further with only certain types of overapplication and underapplication can be resolved in the morphology.
- There has been no consensus as to the nature and structure of reduplication.
- Limits on overgenation are present in all theories but require ad hoc constraints.

Optimality Theory

Optimality Theory(Prince and Smolensky 1993) dramatically changed views on reduplication, introducing constraints instead of ordered rules.

The next few sections will discuss optimality theory based models of reduplication and provide a comparison of both at the end.

Prosodic Morphology

Problems solved by an OT based analysis:

- Rule based analysis have struggled with the relationships between phonology and morphology.
- Optimality Theory represents the phonology and morphology simultaneously solving the problem of expecting the morphology to proceed the phonology.
- A less constrained theory makes it easier to account for the data.

Problems Created

- Removing the order does not give us more insight into the relationship between morphological and phonological processes.
- A less constrained approach makes is harder to provide explanatory results.

Parallel Computation

Optimality Theories claim of parallel computation has come up as an issue before in class with the discussion of **Opacity.**

Parallel computation computation means **“A free flow of information throughout a flat phonological dedication”.**

Raimy claims that parallelism has very little predictive power.

Correspondence Theory emerges from the parallelism of constraint evaluation (McCarthy and Prince, 1995).

- Reduplicant Faithfulness never dominates Base faithfulness, meaning that there is a ranking of Base> Reduplicant.
- Urbanczyk 1996 denies this. His work on OT reduplication claims that the reduplicative templates are in part derived from the status of the reduplicant being either an affix or a root. Root reduplicants are larger than one syllable and they can rank higher than Base faithfullness.

Transderivational Identity

Raimy considers the use of transderivational identity in phonology to be a **success for OT**.

McCarthy & Prince 1995 propose that **Correspondence** is what conditions phonological processes . They expand on the identity constraint from Wilbur 1973.

- Correspondence Theory is the adoption & formalization of the Identity Constraint across phonology.

This is where we see a shift in faithfulness constraints from PARSE & FILL to DEP & MAX brought about from data on reduplication.

McCarthy & Prince make most of their arguments based on data from reduplication and Raimy's thesis is meant to show that their arguments are no longer valid.

Raimy claims that the more powerful a phonological theory, the larger the burden of proof.

In chapters 3 & 4 Raimy discusses how transderivational identity as a method for understanding reduplication is unnecessary.

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Reduplicative Templates

Stemberger 1996: Prior problems of overgeneration in reduplication still affect present OT proposals.

- OT can do string reversal, it is less constrained than the copy and associate models of reduplication and this supports OT as the more powerful theory of phonology.

Kager-Hamilton problem: Templates as objects cannot exist within Correspondence model of OT.

- Templatic backcopying effect is a problem with reduplicative templates.
- A templatic requirement on reduplicant should cause truncation in base.

A backcopying effect based on the template is able to be produced:

/RED+tʲilparku/	RED=MinWd	MAX-BR	MAX-IO
☞ tʲilpa-tʲilpa			*
tʲilpa-tʲilparku		*!	
tʲilparku-tʲilparku	*!		

*Backcopying is when reduplicant affects base

Reduplicative Templates Cont.

Since reduplicative templates are specific to reduplicative forms, the theory is process-specific.

Many argue for the removal of templates from phonological theory.

Why?

OT still has a process specific mechanism for reduplication called RED.

McCarthy & Prince claim that there can be different types of RED within a language.

- Tagalog has CV and foot reduplication.

An analysis of root & template morphology would be needed before deciding

Theories of reduplication should for reduplicative patterns that do and don't occur and why a particular pattern appears in a language.

Summary of Constraint Based Methods

Unlike rule based methods, Optimality Theory is a framework of phonology that happens simultaneously, solving the issue of the order of interactions between morphology and phonology.

However this simultaneous process doesn't tell us any more about this morphological- phonological interaction.

A less constrained method can account for more data but provides less explanatory results.

Correspondence theory is a strong theory based on the identity of the base, but Raimy 1999 believe that the proof of the theory isn't high enough.

Reduplicative templates are a controversial issue in correspondence theory. They are process specific templates.

Optimality theory already has a process specific method for reduplication RED.

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