Revisiting Chamorro: A Cyclic Account of Reduplication and Infixation
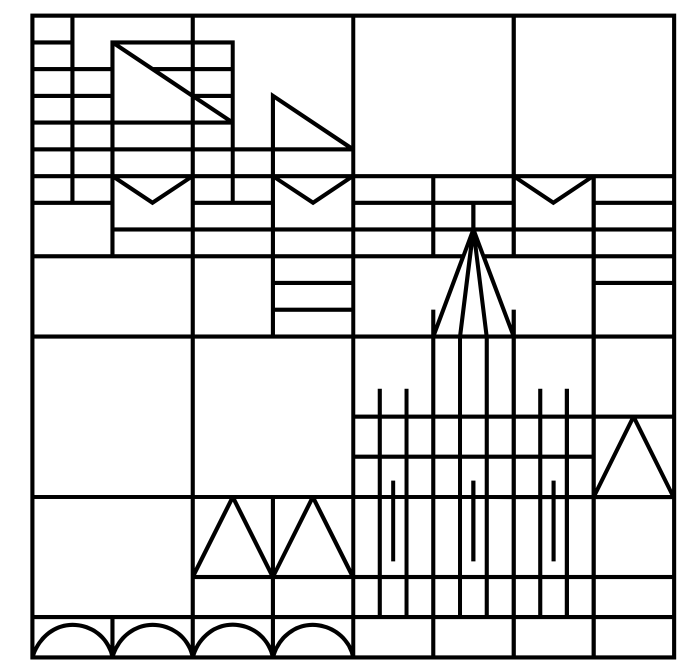
Barış Bay ● baris.bay@uni-konstanz.de

Universität Konstanz

The Puzzle

Can the overapplication of umlaut in Chamorro be captured without BRCT?

A — Exponents

Progressive aspect -> reduplication of the (C)V of the stressed syllable (1)

(1) 'konniʔ   'take' ->   **'ko~ko**nniʔ   'taking'
    take   PROG~take

Passive voice with transitive verbs -> infix -in- appears before the first vowel (2)

(2) konniʔ   'take' -> k**<i'n>e**nniʔ 'taken'
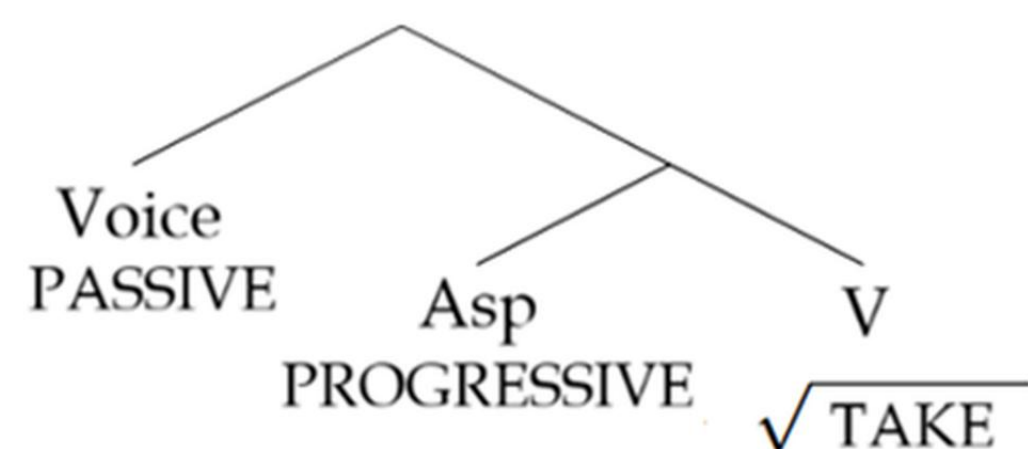   take   <PASS>take

Infixation of -in- triggers a phonological alternation, often called umlaut; the vowel of the **immediately following** syllable is realized as a front vowel:
/u/ ->/i/,
/o/ ->/e/
/ɒ/ -> /a/

Note that, synchronically, Chamorro umlaut is **not** a language general alternation and **overapplication of umlaut** is only observed in the context of reduplication and **does not normally spread to the right** (Harizanov, 2017)

The Interaction of Reduplication, Infixation, and Umlaut

When progressive aspect and passive voice cooccur within a single transitive verb, Chamorro exhibits opacity effects:

(i) infix -in- triggers umlaut, as in (3)

(ii) the progressive reduplicant systematically ignores the presence of the infix -in-, as in (4)

(iii) umlaut triggered by -in- appears to overapply, surfacing not only in the base but also in the reduplicant, as in (4)

(3) **VERB**   **INFIX AND UMLAUT**
    'konniʔ   k**<i'n>e**nniʔ

(4) **VERB**   **INFIX AND REDUPLICATION AND UMLAUT**
    'konniʔ   k**<i'n>eke**nniʔ   *k**<i'n>eko**nniʔ

C

Step 1: Building

Voice PASSIVE — Asp PROGRESSIVE — V √TAKE

Step 2: Linearizing

[PASSIVE-[PROGRESSIVE-[√TAKE]]]

Step 3: Cyclic operations

Cycle 1
a. Exponent choice: √TAKE   →   konniʔ   konniʔ
b. Linear displacement: n/a   - - -
c. Restricted phonology: n/a   - - -
→   Output: konniʔ

Cycle 2
a. Exponent choice: PROGRESSIVE → red   <red>konniʔ
b. Linear displacement: red → __ 'o   ko<red>nniʔ
c. Restricted phonology: link   ko<(C)V>nniʔ
→   Output: ko<(C)V>nniʔ

Cycle 3
a. Exponent choice: PASSIVE → -in-   <in>ko<(C)V>nniʔ
b. Linear displacement: -in- → __ V   k<in>o<(C)V>nniʔ
c. Restricted phonology: umlaut   k<in>e<(C)V>nniʔ
→   Output: k<in>e<(C)V>nniʔ

Step 4: Surface phonology

kinekenniʔ

Figure 3: Derivation of *kinekenniʔ* using Kalin's (2022) model of morphosyntax-phonology interface

What happens? — C

The morphosyntactic structure is built and linearized.

The operations start to apply from the root upwards

A **linking operation** applies as part of the restricted phonology, linking the reduplicant to the corresponding segments of the base

The infixal exponent for the PASSIVE is inserted and it undergoes **linear displacement**

The exponent -in- triggers **umlaut** as part of the restricted phonology

The **phonological grammar fills in the reduplicant** with the previously linked segments from the base

More on Link/Copy — C

Following Arregi & Nevins (2012), agreement is not a single operation but a **split dependency** distributed across modules of the grammar. We extend this logic to reduplication by proposing an analogous **Link/Copy split between morphophonology and phonology**.

That is, just as **Agree-Link** and **Agree-Copy** distribute agreement across syntax and morphology, reduplication can be modelled as an **early linking relation** between base and reduplicant followed by a **later copy operation** that fills phonological content.

So what? — D

–The overapplication of umlaut in Chamorro can be modelled via:

(i) a **link operation** that applies as part of the restricted (early) phonology

(ii) a **copy operation** that applies as part of the surface phonology

– At least some putative cases of reduplication in other languages **may be reanalysed** in this framework without invoking BRCT.

–This case provides **further support** for a model like Kalin's (2022), since the umlaut and the opaque interaction between infixation and reduplication in Chamorro align with the model's cyclic architecture and her conclusions regarding restricted (early) phonology.

B — Background

Step 1: Building the morphosyntactic structure
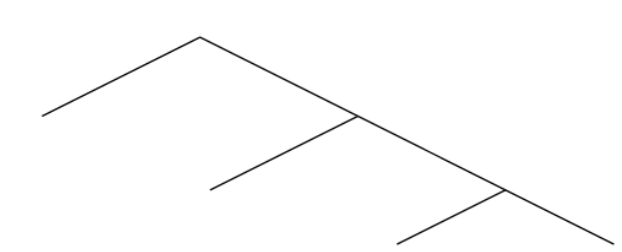
Step 2: Cyclic operations

Cycle
a. Linear concatenation:
b. Exponent choice:
c. Exponent insertion:
d. Restricted/cyclic phonology:

Step 3: Surface phonology

Figure 1: Kalin's (2022) model of morphosyntax-phonology interface

Kalin (2022) proposes a **model of morphosyntax-phonology interface** in which infixation is indirect and pre-phonological.

The model incorporates **restricted phonology**, prior to surface phonology, where phonological rules that are not language general can apply.

Chamorro umlaut fits well within the description of cross-linguistically "natural" but **not language general** phonological processes.

Harizanov (2017) demonstrates that the opaque interaction in Chamorro requires a **cyclic approach** with a serial architecture in the grammar.

Derivation of kinekenniʔ

a. Output of syntax
   [Voice [Asp [V]]]
b. Vocabulary insertion of V
   [Voice [Asp [konniʔ]]]
c. Vocabulary insertion of Asp
   [Voice [red ['konniʔ]]]
d. Reduplication
   [Voice [ko ['konniʔ]]]
e. Phonological affixation of RED
   [Voice ['kokonniʔ]]
f. Vocabulary insertion of Voice
   [-in ['kokonniʔ]]
g. Phonological affixation of -in
   [ki'nokonniʔ]
h. Umlaut
   [ki'nekenniʔ]

Figure 2: Cyclic derivation of kinekenniʔ adapted from Harizanov (2017)

However, **the overapplication effect** of the umlaut triggered by infixation **does not receive a detailed explanation**

Harizanov accounts for this overapplication via **base-reduplicant "identity effect"** in reference to Base-Reduplicant Correspondence Theory (McCarthy and Prince 1993, 1995, 1999).

He adds that "different implementations are possible as long as they ensure base-reduplicant identity".

Could we model this interaction without invoking BRCT?

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