Multiple Feature Mutation in Papuanesia
A typological survey

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Main Claim

- Mutation in Papuanesia shows the same tendencies that we see in segmental affixes.

Outline

Introduction

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- Report the results of a survey on multiple feature mutation (MFM) in Papuanesia.
- Results show similarities to segmental affixation in several properties.
- Potential argument for an item-based approach to morphology.

Introduction

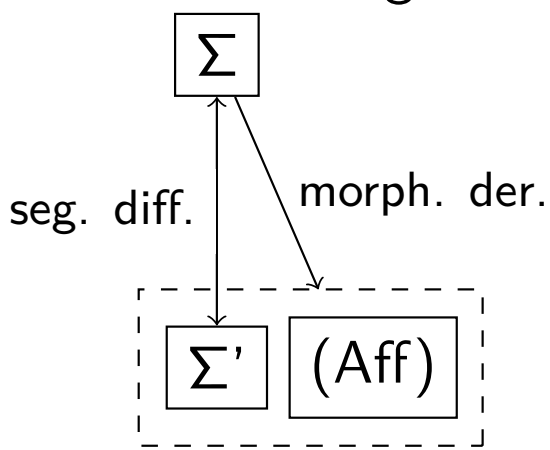
Terminology I: Mutation

- Multiple feature mutation is a kind of mutation.

Mutation Two word forms are related via mutation, if

a. one form is morphologically derived from the other and
b. there is a difference in some segmental feature for some stem segment and
c. this difference cannot be explained as the regular application of a phonological process.

(1) Schematized Segmental Mutation



Introduction

Terminology II: Not Mutation

- Tonal changes and length manipulation are excluded.
- Mutation is different from suppletive allomorphy, because the remaining part of the stem is kept constant and it applies regularly to a set of stems.
- Mutation is different from substitution because it yields different results for different targets.

Introduction

Terminology III: Papuanesia

- Papuanesia includes Insular South East Asia as well as the island of Papua and Oceania (excluding Australia).
- Based on the six macro-areas from Hammarström & Donohue (2014) with the goal to establish a small number of areas with less interaction between the areas than inside them.

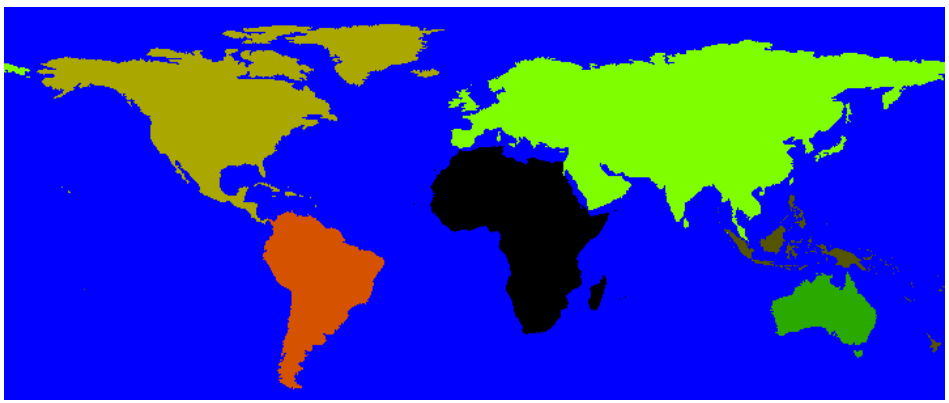


Figure 1: Linguistic macro-areas of the world (Hammarström & Donohue, 2014)

Method

Method

Database

- Part of the MAMPF database (Gleim et al., 2019).
- 75 mutation patterns in Papuanesia.
- 46 segmental MFM patterns in Papuanesia from 31 languages.

Method

Genealogical affiliation

- All languages with MFM included, not controlled for genealogical affiliation.

(2) Genealogical affiliation of languages in the sample

Genus Category	number	percentage
Oceanic	15	48,4%
Non-Oceanic Austronesian	11	35,5%
Non-Austronesian	5	16,1%
Total	31	100,0%

Method

Geographical distibution

- Restricted to languages from Papuanesia.

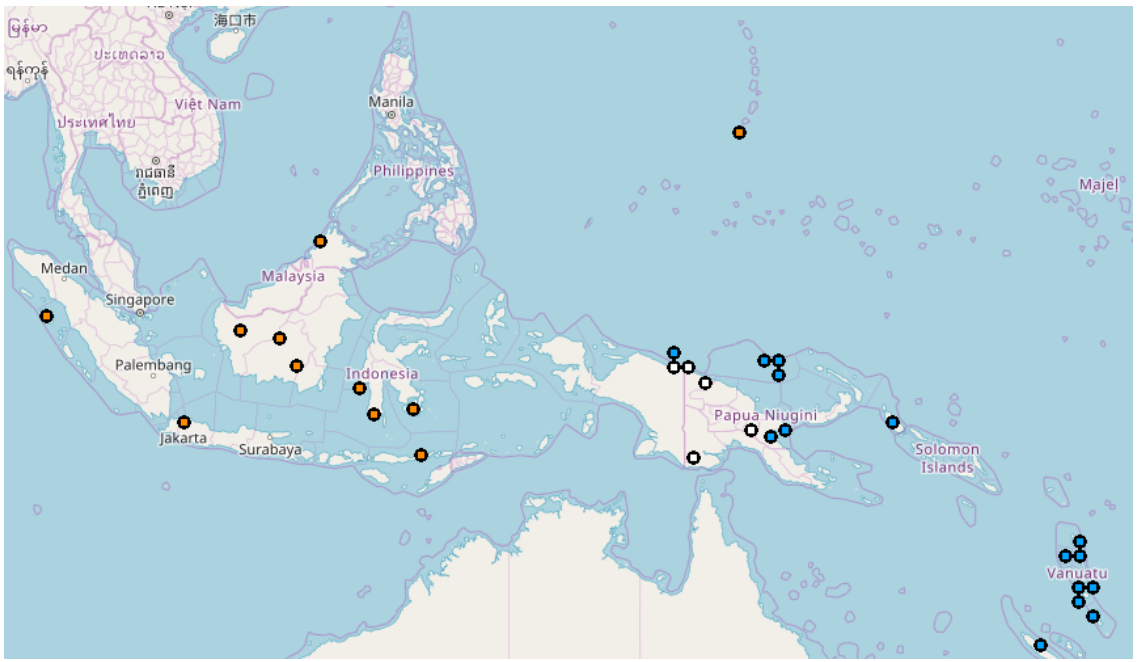


Figure 2: Geographical distibution of the 31 languages surveyed (Oceanic=blue, Other Austronesian=orange, Non-Austronesian=white) © OpenStreetMap contributors

Method

Surveyed Properties

(3) Surveyed Properties

Properties	values
Target	Consonant, Vowel
Edge	Left, Right, n.a.
Lexical Category	Noun, Verb, Noun&Verb, other
Segmental material present	yes, no

Method

Examples: Edge I

- **Left** edge vowel mutation on nouns with segmental material

(4) Chamorro (Austronesian, GU, MP) (Kaplan, 2008, 1)

a. nánɑ
mother
'mother'

b. i nǽnɑ
the mother
'the mother'

c. gúmaʔ
house
'house'

d. i gímaʔ
the house
'the house'

Method

Examples: Edge II

- **Right** edge vowel mutation on nouns with segmental material

(5) Komnzo (Morehead-Wasur, PNG) (Döhler, 2016, 85)

a. kar-fo
village-ABL
'to the village'

b. kar-fø-wæ
village-ABL-EMPH
'really towards the village'

c. nima
like.this
'this way'

d. nimæ-wæ
like.this-EMPH
'really like this'

Method

Examples: Edge III

- **Other** vowel mutation on nouns with segmental material

(6) Nimboran (Nimboranic, ID) (Anceaux, 1965, 186)

a. ŋgedúo-man-t-ám
draw.SG-INCL.DU.S-PRS-INCL
'You (sg) and I draw here.'

b. ŋgedúo-te-men-t-ím
draw.SG-DUR-INCL.DU.S-PRS-INCL
'You (sg) and I are drawing here.'

Method

Examples: Target

- Right edge **consonant** mutation on verbs with segmental material

(7) Pitu Ulunna Salu (Austronesian, ID) (Campbell, 1991, 19-23)

a. maʔ-túlaʔ
   STAT-speak
   'to speak'

b. ki-tulás-am
   1DU.EXCL-speak-APPL
   'We tell (him).'

c. um-petuak
   TR-view
   'to watch'

d. pa-petuas-am
   CAUS-view-NMLZR
   'a view'

Method

Examples: Segmental Material

- Left edge consonant mutation on verbs **without** segmental material

(8) Maskelynes (Oceanic, VU) (Healy, 2013, 149-151)

a. ti(ti)-i
   twist-OBJ
   'to twist something'

b. ⁿdi(ⁿdi)
   twist\AMBITR
   'twist'

c. xaɾuβʷ-i
   scratch-OBJ
   'to scratch something'

d. kaɾuβʷ
   scratch\AMBITR
   'scratch'

Results

Results

Target

- Vowels mutation is slightly more frequent than consonant mutation.
- Might be unexpected if Nasal substitution (Blust, 2004) and Nasal/Oral alternations (Lynch, 1975) were expected to account for most of the data.

(9) Consonant and Vowel Targets in MFM

Target	#	%
Consonant	20	43.5%
Vowel	26	56.5%

Results

Mutation Edge

- MFM occurs more often at the left edge.

↪ mirrors exceptionality of Papuanesia from the global suffixation trend.

(10) Mutation Edge in Papuanesia

Edge	#	%
Left	27	58.7%
Right	17	37.0%
n.a.	2	4.3%

(11) Affixation Edge in Papuanesia and the world (Dryer, 2013b)

	Papuanesia		World	
Edge	#	%	#	%
Left	39	19.2%	152	15.7%
Right	67	37.0%	529	54.6%
other	86	42.3%	288	29.7%

Results

Lexical Category

- MFM occurs more often on verbs.
- Fits the relative rarity of case and plural marking in Papuanesia (Nichols & Bickel, 2013; Dryer, 2013a; Haspelmath, 2013).
- Additionally, TAM marking is rather frequent (Dahl & Velupillai, 2013a,b,c; van der Auwera & Ammann, 2013b,a)

(12) Lexical Category of Mutation in Papuanesia

Lex. Cat.	#	%
Noun	12	26.1%
Verb	30	65.2%
Noun&Verb	3	6.5%
Other	1	2.2%

Results

Segmental material present

- Roughly two thirds of MFM with segmental material present.
- Still one third 'pure' mutation.
- Suprpising because previous work found non-concatenative morphology to be rare in this area (Bickel & Nichols, 2013).

(13) Presence of segmental material in MFM

Segmental material	number	percentage
No	17	37.0%
Yes	29	63.0%

Results

Interaction

- Not all features are completely independent.[1]
- General dispreference for right edge consonant mutation.
- Vowel mutation without segmental material is rare.
- Mutation without segmental material at the right edge is rare.

[1] In this section, I report results of χ^2 tests. However, the data points are not completely independent, because they can include several patterns from the same language. The results should therefore be taken with a grain of salt.

Results

Interaction: Edge × Target

- General dispreference for right edge consonant mutation.
- Can be related to syllable structure.
- Word-initially consonants are more frequent than vowels.
- Word finally, vowels are more frequent.

(14) Universal tendency for left-edge consonant mutation
There are more pattern of left-edge consonant mutation than there are right edge consonant mutations.

(15) Target and Edge (χ^2=17.31,p=0.000032)

Edge\Target	Consonant	Vowel	Sum
Left	19	9	28
Right	1	17	18
Sum	20	26	46

Results

Interaction: Segmental Material × Target

- Only one case of vowel mutation without segmental material present.
- Surprising and unclear what conditions this correlation.

(16) Segmental material and Target (χ^2=28.1383, p<.00001.)

Segmental material\Target	C	V	sum
Yes	4	25	29
No	16	1	17
sum	20	26	46

Results

Interaction: Segmental Material × Edge

- Only one case of right edge mutation without material present.
- Surprising and unclear what conditions this correlation.

(17) Edge and Segmental material (χ^2=12.536, p=0.000399)

Segmental material\Edge	Left	Right	sum
Yes	11	16	27
No	16	1	17
sum	27	17	44

Discussion

Discussion

Mutation resembles Affixation

- The dispreference for right edge mutation mirrors the absence of a strong suffixation preference in Papuanesia.
- Similarly to segmental morphology, mutation tends to occur in the verbal domain.
- Potential argument for treating mutation and affixation the same, e.g. strictly item based approaches or strictly construction based approaches.

Discussion

Left Edge Consonant mutation

- Consonant mutation shows a strong preference for the left edge.
- This can be explained with universal phonotactic preferences for CV syllables.
- Words more frequently have consonants in initial position than in final position.
- Tendency is expected to hold for all macro-areas.

Discussion

Puzzles

- Tendencies against right edge mutation without segmental material present and against vowel mutation without segmental material remain unexplained so far.
- No possible explanation by comparison to affixation, since presence of segmental material is a variable.
- For the same reason, no possible explanation from phonotactics.

Conclusion

Conclusion

- Multiple Feature mutation resembles segmental morphology in edge orientation (left) and lexical category (verb).
- A strong bias against consonant mutation can be exaplained by phonotactic tendencies.
- Correlations of segmental material with target and edge remain a puzzle.

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