# Graphemic choices in writing Papua New Guinean languages through the years 






53 Wutung 4 Vanimo (2)
5 lsaks 56 Ningera
57 Rawo
58 Puare
59 Womo
60 Fas
61 Psgi
62 Kilmeri
63 Manem
64 Ainbai
65 Waris
68 Sowanda
67 Umeda
68 Imonds
69 Daonda
70 Auwe
71 Baibai
72 Kwomtari
73Amanab
74 Dera
75 Karkar-Yuri
76 Angor
7 Nai
78 Odiai
79 Yale
80 Namia
81 Pouye (2)
82Awun
83 Karawa
84Awtuw
85 Yis
86 Ak
87 Guriaso
87 Guri
88 Kwamtim One 90 Seta
91 Molmo One
92 Kabore One 93 Inebu One 94 Southern On 95 Yau [yyu] 96 Ekei Ekel 98 Northern One

99 Warapu 100 Ser a 101 Sissano 102Arop-Sissano 103 Malol 104 Tumleo 105 Valman 106 Kap 107 Ulau-Suain 108 Aruek 109 Wom 110 Yambes 111 Kombio 112 Torricelli 113 Bragat 114 Amol 115 Yangum Dey 116 Aruop 117 Yapunda 118 Dia 119 Sinagen 120 Agi 21 Yangum Ge 122 Ningil 123 Yil 124Au 125 Gnau 127 Minidien —— 128 Laeko-Libuat 129 Pahi 130 Heyo 131 Yahang 132 Beli 133 Silipu 133 Siliput 134 Wanap 135 Yangum Mon 136 Eitiep 137 Urim 138 Ambrak 139 Mende 140 Mehek 141 Kwanga 142 Hanga Hundi 143 Bumba Hundi 143 Uurat 144 Urat

## PAPUA NEW GUINEA

Language Families

## MAP 3

Notes:

1. White areas are sparsely populated or uninhabited.
2. Parentheses show the number of times a langusge's number appears on map, if more than once.
(2) - - - -

- Province boundary --- -. Language area overlap

$\square$ Austrones ian $\square$ Sepik
Notes:

1. White areas are sparsely populated or uninhabited.
2. Parentheses show the number of times a langusge


Fas Kwomtari
Pauwasi Senagi

| 0 | 10 | 20 | 30 | 40 |
| :---: | :---: | :---: | :---: | :---: |
|  | 1 | 1 | 1 | 1 |

2018 SIL Internafonala

80

## Some PNG Language Statistics

 ethnologuexom




 sininghasmorkedinthepastuzyears

## 3 time periods

- 1960-1990 - older, paper archives
- 1990 - 2010 - electronic archives
- 2010 - today - currently active projects
- I was able to get feedback from a questionnaire from the last group.

|  | obdemdata |  | newerdat |  |
| :---: | :---: | :---: | :---: | :---: |
|  <br>  |  <br> Fromoter <br>  |  <br>  <br>  |  <br>  <br>  <br>  |  <br>  <br>  <br>  |
| Morober | 5 | 9 | 9 | 23 |
| Easmemik | 9 | \％ | \％ | ¢9 |
| Madang | 安 | 15 | 良 | 19 |
| MineBay最 | 5 | 9 | 4 | ¢8 |
| G4K | 安 | 6 | 良 | － |
| Western | 5 | 5 | 最 | 立 |


|  | boderdata |  | newerdata |  |
| :---: | :---: | :---: | :---: | :---: |
| PNGRnguge <br>  <br>  |  from folder （nre－990 | banguges fromopds角最品品 |  <br>  <br>  <br>  | totant它负 <br>  <br>  |
|  Guinea | 53 |  | 最 |  |
|  | 85 | 最 | 立衣 |  |
| Sepik | 6 | 最 |  | ¢0 |
|  | 最 | 最 | \％ | 8 |
| South－Central Papuan |  | 豕 | \％ | 6 |

## Rotokas (N Bougainville) - 11 phonemes

$\beta, \varepsilon, g, i, k, o, p, r, t, u, \beta$

## Tawala (Austronesian) - 19 phonemes

## $h, b, d, e, g, g^{w}, h, i, k, k^{w}, l$

$m, n, o, p, t, u, w, y /$

## Melpa (TNG) - 26 phonemes

$/ a_{,}^{m} b,{ }^{n} d,{ }^{n} d_{n}, e_{,}^{n} g, I, i, j, k, 1 d_{n}, 1,1$, $m, n, n, \eta, 0, p, r, t, t, v, u, u, w /$

## Alekano (Trans New Guinea) - 16 phonemes

$\bar{a}, e, \gamma, h, i, k, 1, m, n, \gamma$,

$$
p, s, z, t, u, \beta
$$

## Sudest (Austronesian) 40 phonemes

/a, b, bw, d, e, g, $, \gamma^{W}, g^{W}, h, h^{W}, i, d z, k, l, m$,

$$
\begin{aligned}
& p^{w}, r, s, t, d, u, \beta, \beta^{w}, w, j /
\end{aligned}
$$

## Raw data and weighted mean

| - |  <br>  |  <br>  |  <br>  <br>  hatat |  <br>  <br>  <br>  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | 或 | - |
|  |  | - |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  - |  |  |  |  |

(

## Use of diacritics

|  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | exampes |  | OpDS |  |  |
|  |  |  | RDM | RDKM | RDKM |  |
| 最 | dracriterget |  |  |  | 占最最最 | increase inuse |

## What the trend might show

A. Use of diacritics in orthographies employed by SIL-PNG language projects were mostly used in the vowel systems, to show a similar place of articulation to another vowel on the vowel chart. Gizrra (tof) does this with two of its seven vowels:

$$
\begin{aligned}
& \text { <u> for /u/; <u > for lif/ }
\end{aligned}
$$

## What the trend might show

B. Many languages use diacritics to show nasalization and/or vowel length, so depending on the number of vowels in the inventory, one language can have many diacritics for differentiating just one or two sound concepts; eg.

## Use of multigraphs

|  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | examples | fobder | OPDS | Sumeve |  |
|  |  |  | RDK旨 | RDKM | RDKM |  |
| 2 |  | thmp <br> nd |  | 衣最最最 | 153645 | increase <br> inhe |

## What the trend might show

A. This is the most common strategy for prenasalized consonants, labialized consonants (sometimes both) and for length in vowels and consonants. Since these features often cover a range of consonants or vowels (and not just one at a time), this strategy can be used a lot in any one language.

## What the trend might show

B. Multigraphs are often used in overdifferentiation, when something like prenasalization does not need to be shown in a more purely phonemic orthography. To know that English spells its nasals before nonnasal consonants can be a big bridging factor in employing this type of overdifferentiation: combine, condition, twin, quick

## Sudest (Austronesian) 40 phonemes






## Use of underdifferentiation

- 


## What the trend might show

Possible reasons for the increase in use of undercmrerentiation：
立creaseminuertechnomy
 differentelectronicdevices
夜佔phneusehasskyrocketedinphGutherecentpast
 ortographs onamorephonemitrepresentaninthealphabewt maybevenmoredesirablebytheommitytoreducether huberomuntexablemettersintheaphabebumakeumeasiemo


## Use of overdifferentiation

|  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | bexmbes | Eblder | Opds |  |  |
|  |  |  | RDSM | RDKM | RDKM |  |
| 4 | overdifferent就品 | 5bxhnd <br> 皃它 |  | 899最最 |  | exentual decreaseming品它 |

## Use of overdifferentiation

## What the trend might show

A. Possible reasons for the decrease in use of overdifferentiation:

 complexmorphomsyespeciatyonthexerbwandthscanmaker wordsunweldintheirlengthogetherwithmutraphswruen wordsbecomemoredifficutodecypheronemayto counteract thisproblemistousetewermunthasmhichmighbepreferred fonthemreasonswhebrdoing butwountpmihterainreading


## What the trend might show

B. In the Urim language, for example, it was mentioned that although they have long vowel phonemes:
la:, e., i., u:I
they decided NOT to write them as:
<aa, ee, ii, uu>
because they are phonemic only in one-syllable words. It's desirable not to use these digraphs at all.

## Use of a LWC letter not used elsewhere

|  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | stratesmused | bexamptes | tolder |  | 5umer |  |
|  |  |  | RDM | RDS受 | RDM |  |
| 5 | Englshetter nowsed <br>  |  | 走5256 |  |  | decreasenin USE |

bsenhabubetternowsedelsemheren

## What the trend might show

The decrease in use of English letters not used elsewhere could be due to bridging concerns, where the letters used in one's mother tongue are expected to reflect the alphabet and sound patterns of the official language. So, for example, using a <c> for the glottal stop doesn't "feel" natural, when one has a strong association that the <c> letter should/must represent the [k] sound, as in <cat>.

## Use of letters not available in the LWC

-9

## What the trend might show

A. This is perhaps to be expected, again considering the spread of technology and the texting phenomenon. These characters for use in an alphabet are not standard on computer keyboards or phone touchpads. Some special, non-English letters are found on smartphones by pressing and holding buttons, which reveals a choice of alternate characters, but this feature is only available on higher-end phones and often only the diacritics used in European languages.

## What the trend might show

B. The use of $\eta$ as a grapheme has increased over time, which contrasts with the overall decrease in using other non-English letters. This strategy helps to make words shorter, especially when a language has a lot of velar nasals. It's also easy to write (not text!) and recognize.

## Other questionnaire responses - newer data

- General challenges
- developing an alphabet for multiple dialects - unilectal vs. multilectal, etc.
- breaking habits of previous orthography choices; e.g. German sch> for $|x|$, Fijian/Samoan <g> for/n/; <q> for/8/ influences on orthography


## Other questionnaire responses

- Stakeholders in the orthograpny enterpnise centarued


品humheadersmespecialtrelatedtothemanshation
品comuntyleaders
 makingorthogrphydecisions





## Other questionnaire responses

Orthographic strategies that needed changing

- differentiation - either more underdifferentiation or more overdifferentiation
- this is mostly an issue for items like nasality, length, etc.

Continuing challenge

- What to do with more than 5 vowels? Digraphs can be easily confused with diphthongs.


## Other questionnaire responses

- Orthographies and technology
- Communities are "getting by" with less differentiation; e.g. leaving off diacritics because they aren't available without special apps
- this is more easily done with a fewer number of diacritics
-using numbers to help shorten longer words; e.g. - <waiwaisana> --> <wai2sana>


## Other questionnaire responses

- Forces at work shaping the orthography:
- linguistics/phonemics
- community input
- a healthy mixture of these two
- striving to make it easier to read and to teach reading
- bridging to official language literacy (English, Tok Pisin)


## Overall impressions

Orthographies are moving towards:

- less of a felt need to fully reflect the phonemic reality in a language
- more of a felt need for the written language to mirror the official languages of English and Tok Pisin (bridging)
- more of a felt need to have a simpler orthography to utilize technology with one's mother tongue


## Questions?

## THANK YOU!

## References


 (2x


 1-2

 -


## References

- 








## References




 Moresbypepatmentomedinant
 educationprogramesinminorthngungemmuntist BangkKunescobangkok




## References




 gudetotheprocessunEscong
 Benamispubishingco
 ahphbetrompapunewGneahmonesmancapamenmoodayeds


## References


Simons Gankomprnciplespmundalectarthostaphydesion


 onnewhitingstemstondontuitedBiblesocietes
 Kangugesmorsphaconfencent
 Alphaberchonceandcodesmuchesingreeksis.hprosmatics


## References

 ponnpresentiont





File Home Insett Design Layout References Malings Review Vew Hep $P$
Yisasi makakáác nónim wagani

## Mactiul ăfắrémóni

1

## Yisasasin annafú ąkeckúyic ândă̌i

(Dk 3:23-38)
${ }^{1}$ Yisąsǐ Kaِraisǐ wenǐ Dewictin ana wánimǐ Dewicti wenǐ Ewaran ana wánimǐ Yisásin ánkun nánni mącnǐ mukemóni．${ }^{2}$ Ewăram weň̌ Aisackim mącdánimǐ Aisacki wenǐ Yekopim mącdánimǐ Yekopi wenǐ Yurą namac weąnkunnáַmác maccdánimǐ ${ }^{3}$ Yurąa wenǐ Tema mandemí Perásin namac Siran namac yenkannda
 wenǐ Aminaracpǐn maַcdánimǐ Aminaracpǐ wenǐ Nason mācdānimǐ Nasom wenǐ Sarāmon maַcdánnimǐ ${ }^{5}$ Sarāmon weň̌ Decafĩ maַndemí Boasǐn maַcdánimǐ Boasi wenǐ Ructi māndemí Owectǐn mācdaַnimǐ

Owectǐ weni Yésin mácdąnimi
${ }^{6}$ Yési wenǐ Dewicti yíkoyunic ínánin mācdănimì
Dewicti wenǐ Yurayạn ánac mąndemí Soromonǐ mącdạnimǐ
${ }^{7}$ Soromonǐ wenǐ Diawoam maccdánimǐ
Diawoam wenǐ Awaisą mącdắnimǐ

## before－Gadsup NT excerpt－after

## Jisäsi mäkäkäc nonim wäyani

## Metiu äfäremoni

1

## Jisäsin änafunän yiwikuci

${ }^{1}$ Jisäsi Mesäya Devitin äna wänimi，Deviti Äbrähamin änam wemoni．Äfo Jisäsin änkun yiwikuci mäcnimukemi：
${ }^{2}$ Äbrähami Äisakin äfoi，
Äisaki Jekopin äfoi，
Jekopi Juda nämäc wen äfäconän yifoin wemi．
${ }^{3}$ Juda weni Tamami mändemi Peresinuc Serankändä mäkemoni．
Peresi Hesronin äfoi，Hesroni Ramin äfoi．
${ }^{4}$ Rami weni Äminädapin äfoi，
Äminädapi weni Nasonin äfoi，
Nasoni weni Salmonin äfoi．

## Orthographic conventions

- replaced underscore with diaresis for different vowel quality
- eliminated all tone markings (acute and caron)
- c is used for glottal stop (common among related/nearby languages); now not written before a consonant (see Dewictin vs. Devitin)

Paléti ngê Yesuu uyee têdê u ngwo dy:ââ ngê
Mak 15:6-15, Luukî 23:13-25, Njon 18:39-19:16
${ }^{15} \mathrm{M}$ :ââ k:oo Nju tpémi yi naa ndîî u dye ghi ngê, yélini mbwa k:oo dnyimo kwo, Paléti ngê ngmêdpîmo pw:iipw:ii, apu, Nju tpémi yi nuw:o dmi mb:aamb:aa ngê paa pyaa we. Pini n:ii u pi pi knî y:oo u kwo dnyimo tpapê, yini yidpîmo pw:iipw:ii. ${ }^{16}$ Yi m:aani ngê mbwa u mênê pi ngmêdoo kwo, u pi Mbadapas. Pi yintómu yi lama yi pini u pi doo ya. ${ }^{17}$ Dini ghi n:ii ngê yoo kwodonkwodo a wó, Paléti ye póó wo, yepê, Ló pini u yi nmye ngma a kwo, nî pw:ii? Yepê, Mbadapas ay:aa pw:ii ó Yesu ay:aa pw:ii, pini n:ii p:uu ala kópu a tpapê ngópu, apu, Pini n:ii Chóó Lémi ngê a ngmidi ngê, wu vyîlo. ${ }^{18}$ Paléti ngê yi kópu ye poo ngê, mu kópu u dîy:o u lama doo ya, Nju tpémi yi kada pini knî y:oo Yesu ka ń:ee dê kaa ngmê, a kêê k:oo u l:êê dîy:o dê kaa ngmê.

## Orthographic conventions

- 11 vowel phonemes - 5 vowel letters plus 6 diacritics on same
- Nasalization is marked with a colon before the vowel.
- Length is marked with double vowel letters.
- Lots of prenasalization, labialization and/or palatalization on the consonants - nj, nd, pw, ngm


## Jakobo â Johane jahe fekicne enicte mupic

 (Mar 10: 35-45)${ }^{20}$ Damen ira 3ebedaio nonân-ticnezi nokâ jahec-ticne Jesure manfunko bacjofa rarâ fodapehuc wiac mocte numucnewec. ${ }^{21}$ Eme wiocnerâ muwec, "Go wemo wiacte egarekac?" Eme eki muwec, "Go mutec gokâ jahec-nane Wofun sâko fua tâcnezokic damen ira gâjongao pifec â pifec nezepirec." ${ }^{22}$ Mume Jesuzi âzâcnewec, "Doŋe funne kâuc bahuc inuc mungopien. Noni opâ zazacne nâpemu i nohe sâcne nânicmu me?" Eme jahe mupic, "Ea, sâcne nanacmu." ${ }^{23}$ Mupire jasawec, "Opâ zazacne nânâ i nânicmu, â gâjoŋ-naneo yeje irec dâp mumu ine norao mi fokac, Mamac-nanezi mujarewec i jape nepe ira peninmu."
${ }^{24}$ Eme motec 10 jape dân i manarâ âgo jahec-jenic jahere mana sâqorembin. ${ }^{25}$ Eme Jesuzi hefârec-joparâ ziŋuc jazawec: "Mâren ŋicwofun jaje nic rauc-jopahuc kipan qaqafâc-jenic bacjopaengopien, â fekicne jape omane qâhuc-joparâ nicbombon ejareengopien, i manaengopien. ${ }^{26}$ Done ine ipuc mi enzepien. Dojeraonec moczi fekicne ezo murâ gâcne nonere wahamicne erâ juzejec. ${ }^{27}$ Â micne ezo murâ gâcne nojere kipan qaqa erâ juzejec. ${ }^{28}$ Dic Fâri Wâtunne e ipuc jaha none kipan qacneninte mâcne, e jahac kipan qaqa gie bahuc yic bocjaha kiwiric-jepic rorâ juju-ticne qikiŋneocte wahawec."
${ }^{8}$ Gêdên tonan Jesunê gacsenomi sêsa malac sêja sebe sênam ôli mo. ${ }^{9} \mathrm{Ma}$ awê Samariana tonay kêsôm gêdên en gebe "Aôm Juda ma aê awê Samariana, mago amboac ondoc tec koten gebe jakên bu aôm ônôm nec." (Gebe Juda to lau Samaria nên bin gelom tau atom:) ${ }^{10}$ Go Jesu gêjô en awa gebe "Aôm embe ôjala gên, tan Anôtô kêkên nan, to yac tan kêsôm gêdêy aôm gebe Ôkên bu mênjanôm nay, go aômgen oten en gebe êkên bu mata jalina êndên aôm." ${ }^{11} \mathrm{Ma}$ awê kêsôm gêdên en gebe "Apômtau, aômnêm laclu masi ma bu nec gacgen kêsêp gêja su, ma aôm oc ôkôc bu mata jalina tau anga ondoc. ${ }^{12}$ Aêac tameni Jakob kêkên bumata tonec gêdên aêac. Êsêac to latui ma nê bôc sênôm bu tau. Aôm kôlêlêc en su me." ${ }^{13}$ Go
ma jamên tonec êtu jatê buna êtiam atom."

16 Ma Jesu kêsôm gêdên en gebe "Ôna ômôêc nêm akwey, agêc amu amêy tonec." ${ }^{17}$ Tec awê gêjô en awi gebe "Aênoc akwen masi." Go Jesu kêsôm gêdên en gebe "Kôsôm jagêdên gebe nêm akwen masi. ${ }^{18}$ Aôm gôjam yac lemen ten su, ma yac, tan galor gôjam gômoa nan, nêm akwen en atom Tec kôsôm jagêdên."

19 Ma awê kêsôm gêdên en gebe "Apômtau, aê galic aôm propete ten ${ }^{20}$ Aêac tameni teten mec anga lôc tóne ma amac tec asôm gebe aten mee namala gêc Jerusalem." ${ }^{21}$ Go Jesu kêsôm gebe "Awê, ôkên êwin aê gebe noc ten oc mênêsa, nay aten mec êndê! Tamoc anga lôc tônê to Jerusalem atom

## Official languages of Papua New Guinea

- English - taught in schools
- Tok Pisin - an English-based pidgin/creole
- mostly used along the north coast, highlands and islands
- Hiri Motu - a simplified version of the Motu (Austronesian) language
- mostly used along the south coast; in decline

