# HOW DIFFERENT METHODS LEAD TO DIFFERENT TREES FOR THE TIMOR-ALOR-PANTAR LANGUAGES

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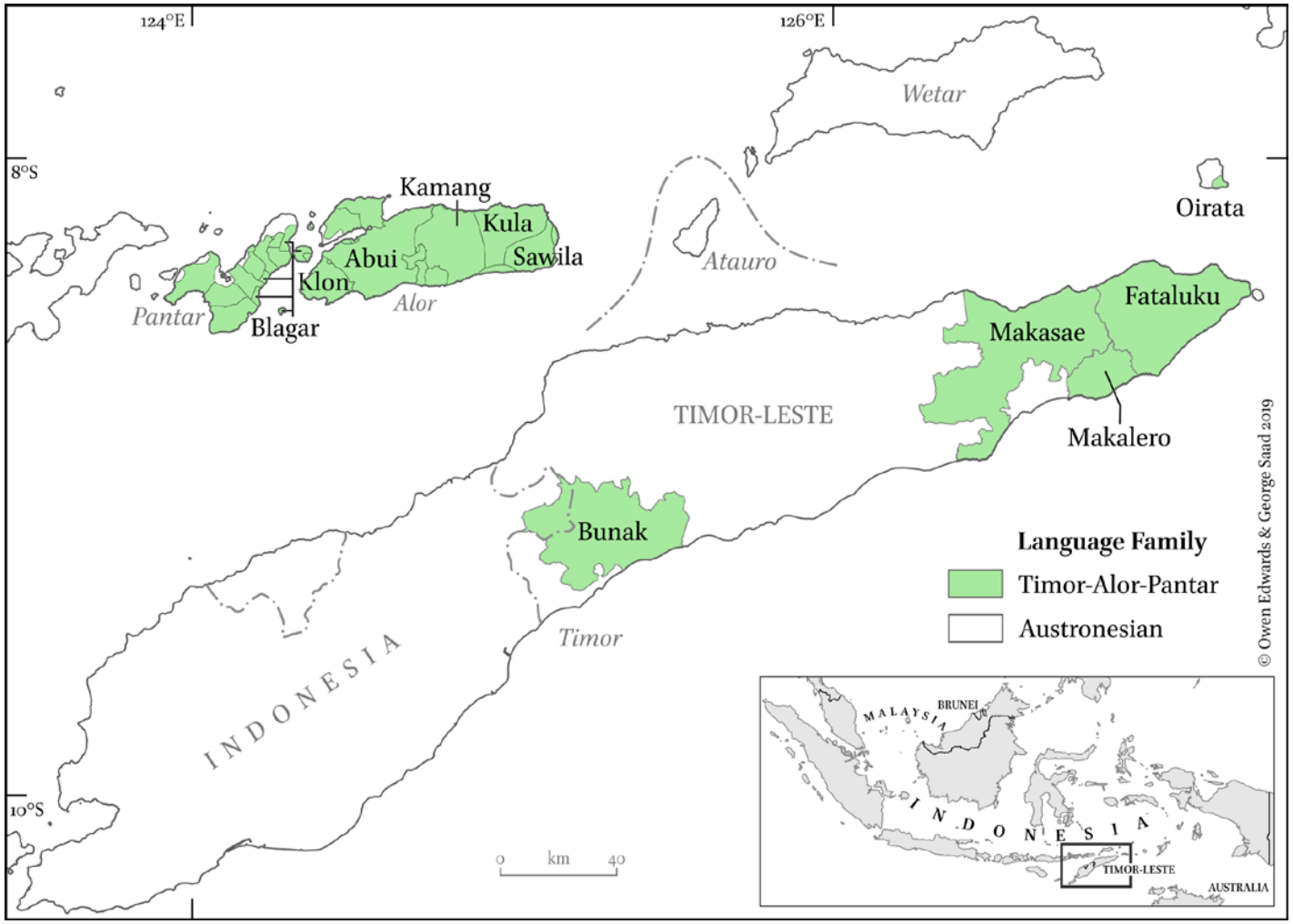
# TIMOR-ALOR-PANTAR LANGUAGES

Three apparent high-level groupings:

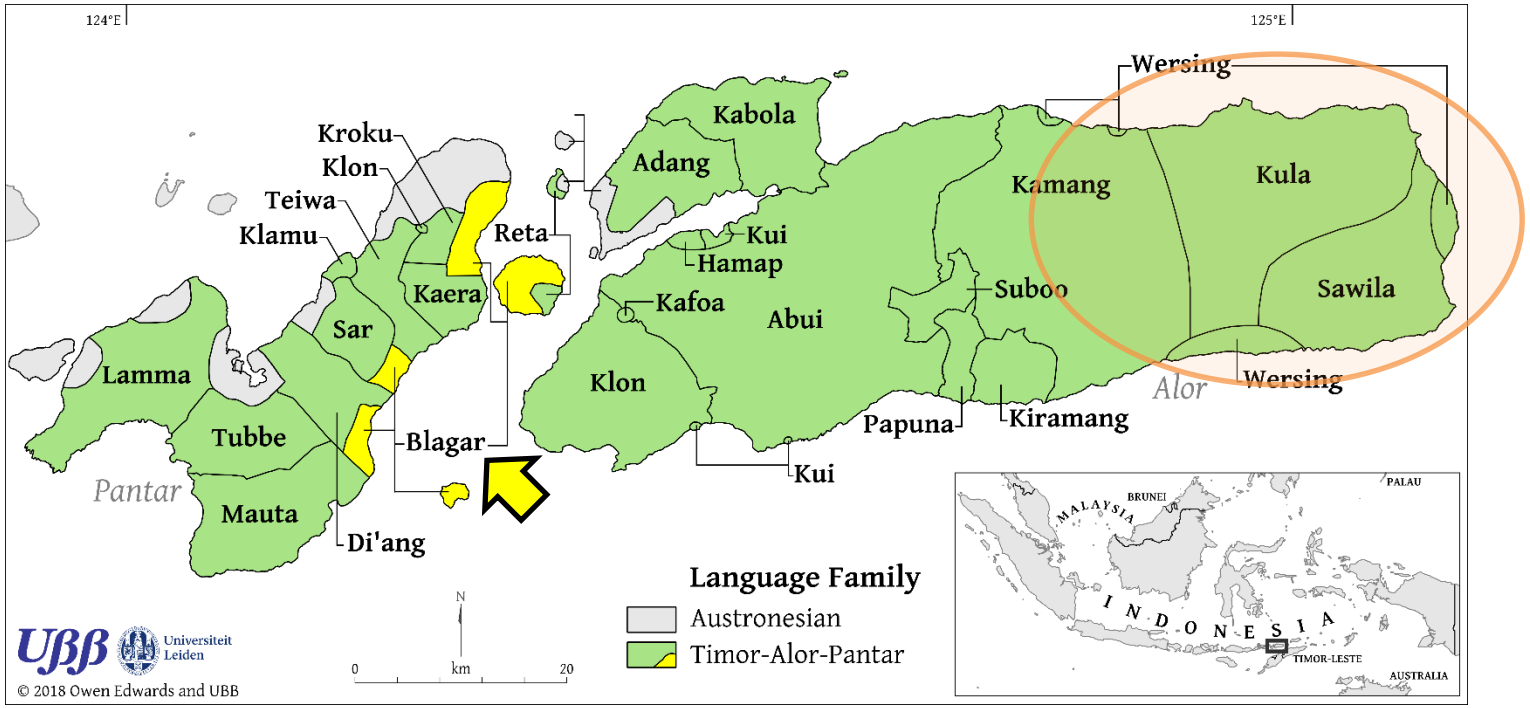
- Bunak
- East Timor
- Alor-Pantar



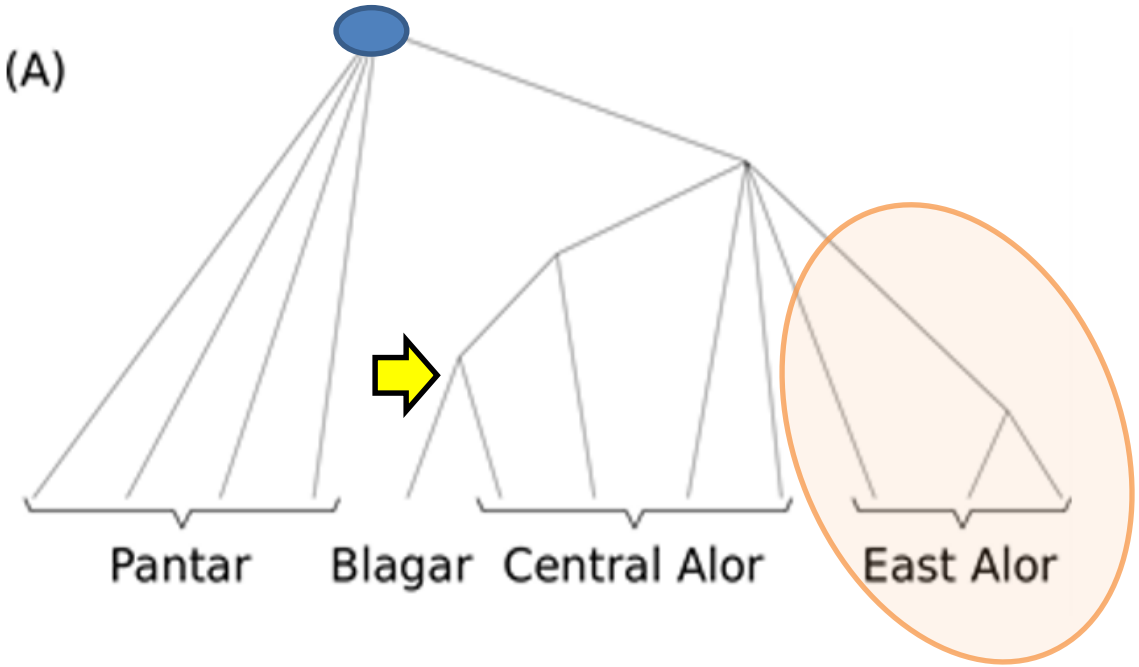
# INTERNAL STRUCTURE

Internal structure of Alor Pantar node is unclear, different proposals in particular about

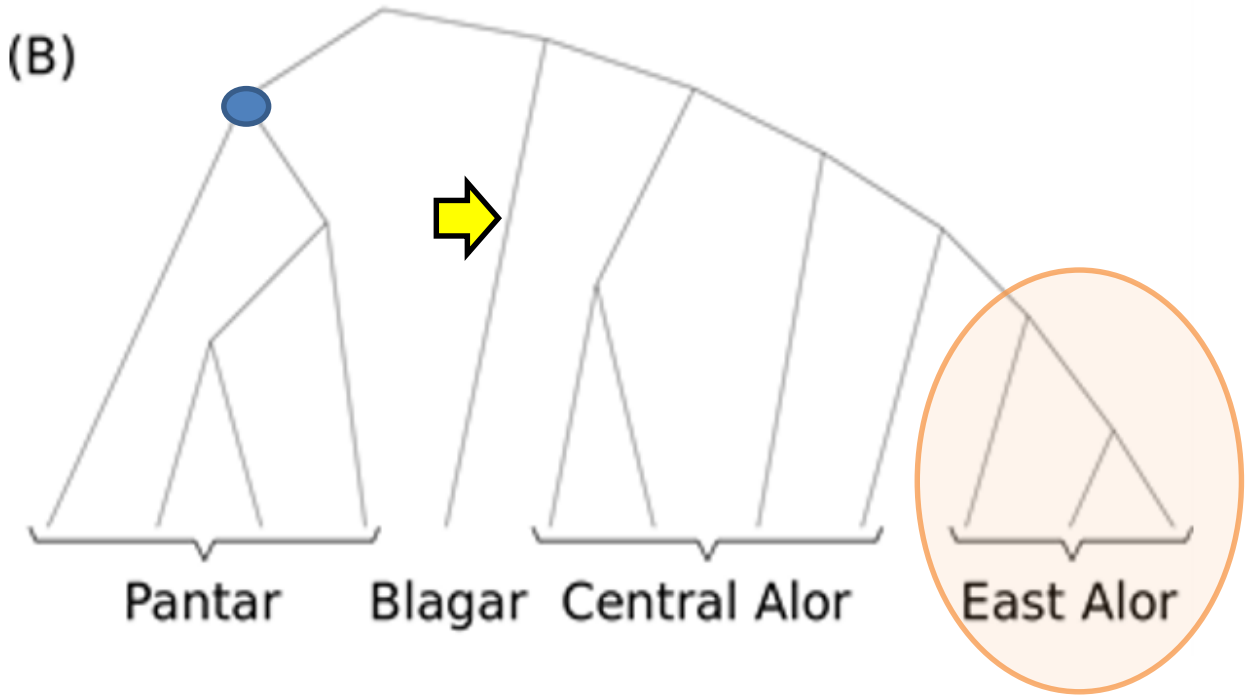
- E Alor
- Blagar



# EARLIER PROPOSALS




*Holton et al. 2012*




*Robinson & Holton 2012*

Early vs later splits are often taken to reflect relative age (Sapir 1916)

# NEW DATA...

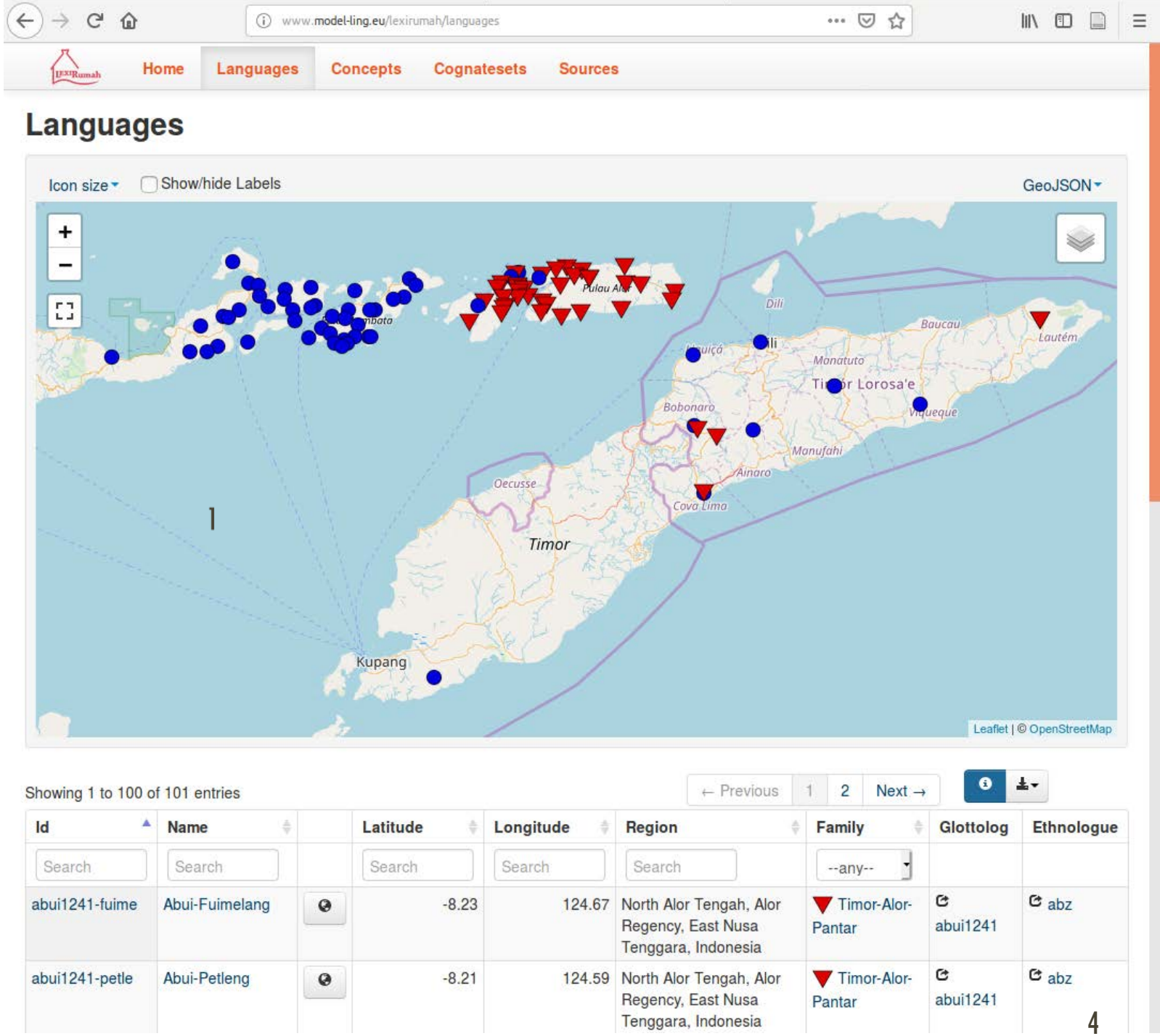
LexiRumah: Extensive word lists from various sources, including recent field work

Currently 51 TAP varieties

On average 461 lexemes per variety

- And still growing

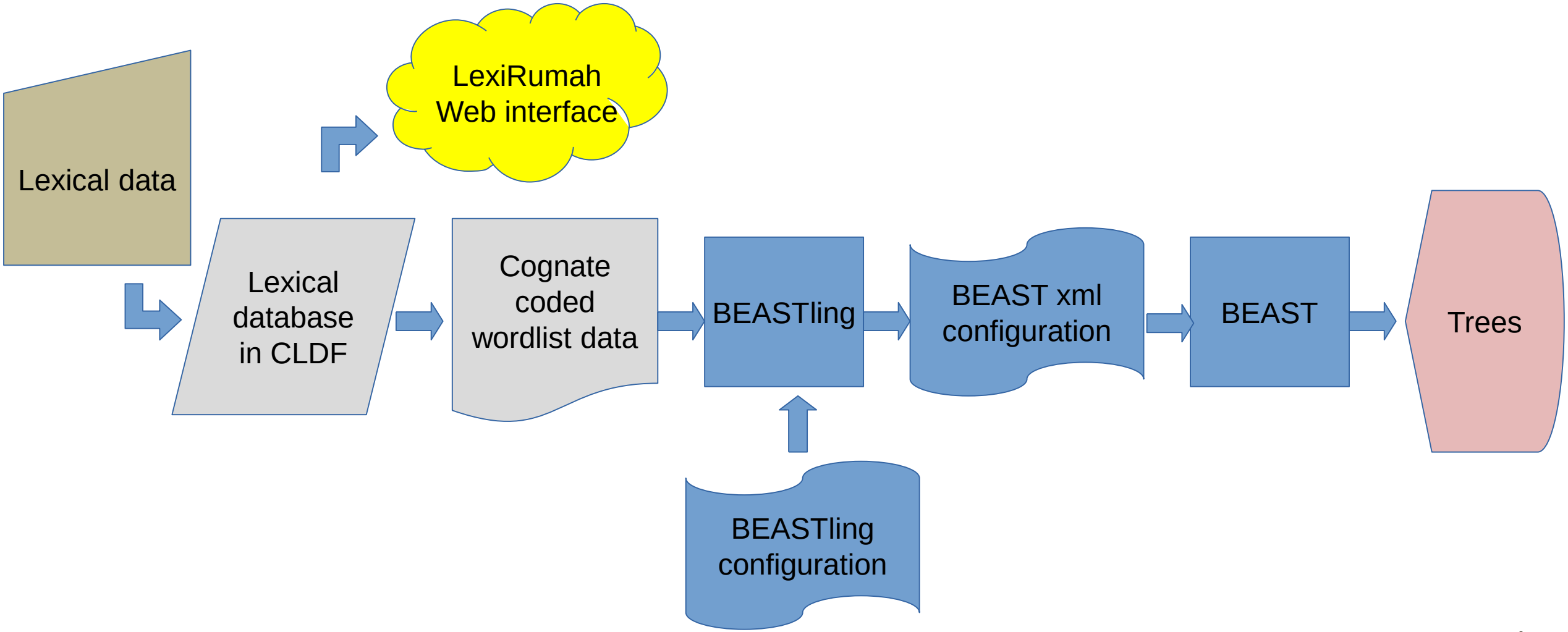
https://lexirumah.model-ling.eu/lexirumah/



# . . . , NEW METHODS

- Automatic Cognate Detection (LexStat)
- Loan exclusion using non-intervention methods
- Bayesian phylogenetics (using models tested for linguistics):
  - Covarion model, with rates varying between concepts
  - Birth-Death tree prior
  - Only constraint: Alor-Pantar clade, for calibration

# TECHNICALITIES: THE PIPELINE



# METHODOLOGICAL VARIATION

Problem: What models are actually good for phylogenetics in historical linguistics?

"If you don't know what is best, try the options."

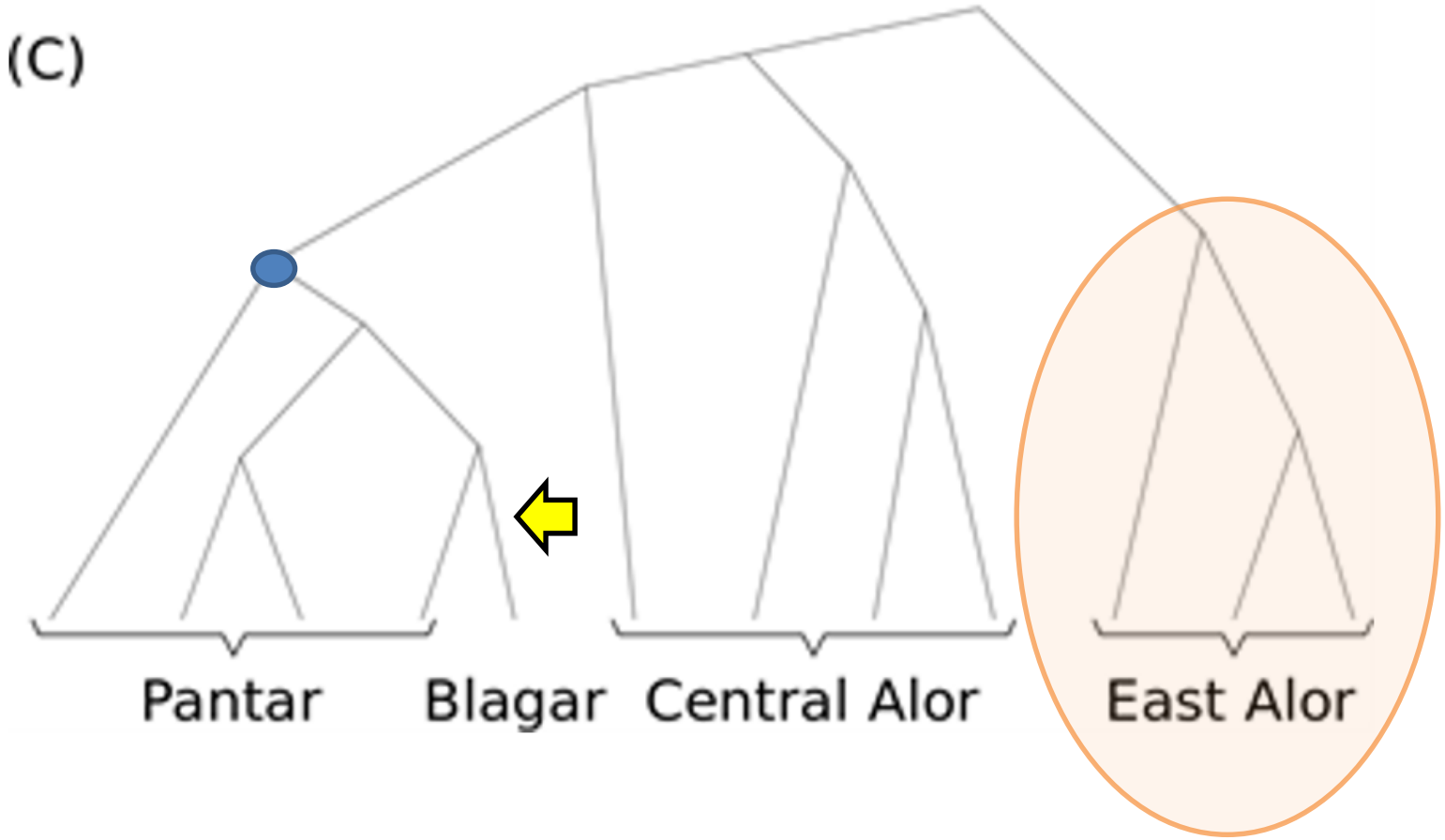
- Vary cognate coding: Different coders, different parameters
- Include more, or fewer loans
- Use different models, trees, calibrations

All give largely similar results

# RESULTS

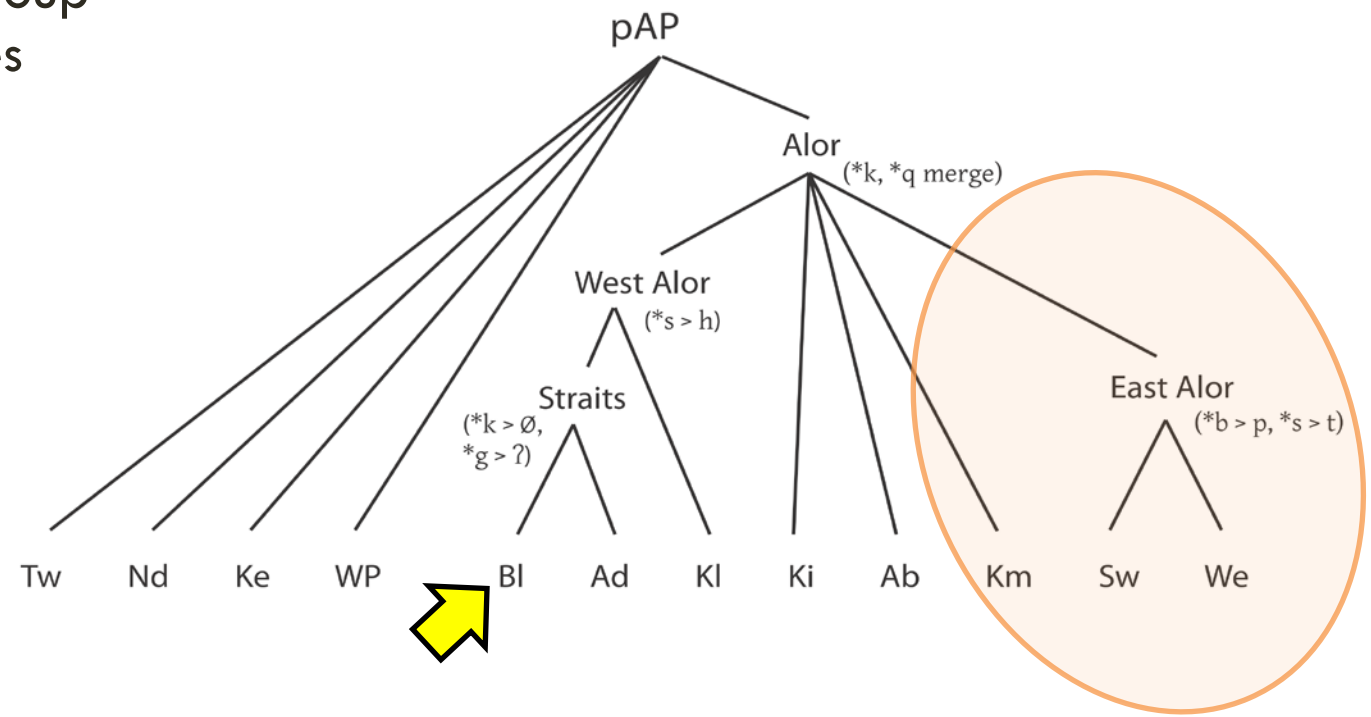

Timor Alor Pantar
E Timor
E Alor (EA)
Alor Pantar
Nuclear Alor Pantar (NAP)
Straits
Alor
Pantar
Pantar Straits
bunak-malia
bunak-suai
bunak-bobon
oirata
fataluku
makasae
wersing-marit
wersing-taram
sawila
kula-lanto
kamang
abui-fuimelang
abui-atim
abui-takal
abui-petle
abui-ulaga
kafoa
kiraman
kui
klon-bring
klon-hopte
kabola
adang-lawah
adang-otvai
hamap
kaera
reta
blagar-pura
blagar-kulij
blagar-baka
blagar-nule
blagar-bama
blagar-tuntu
blagar-warsa
klamu
teiwa-leban
teiwa-nule
teiwa-adiab
deing
westpantar

# EAST ALOR SPLIT IN ALOR-PANTAR BRANCH



# MANUAL TREE (HOLTON ET AL. 2012)

- Small data set (12 varieties, ~200 items per variety)
- Tree has less resolution (e.g. no Pantar subgroup)
- East Alor embedded in Alor subgroup
- Blagar groups with Alor languages



# DIFFERENCES WITH OUR TREE

- Holton et al: Phonological innovations;
  Here: Lexical changes
- 11 overlapping sound changes,
  subjective choices of researchers
  determine 6 defining changes

| Sound changes | Languages |
|---|---|
| *b > f | Teiwa, Klamu, Abui (in Teiwa and Klamu only non-initially) |
| *b > p | Kamang, Sawila, Wersing |
| *d > r | Abui, Kui (in Kui only finally) |
| *g > ʔ | Blagar, Adang |
| *k > ∅ | Blagar, Adang |
| *q > k | W Pantar, Blagar, Adang, Klon, Kui, Abui, Kamang, Sawila, Wersing (Adang ʔ < k < *q) |
| *s > h | Blagar, Adang, Klon |
| *s > t | Abui, Sawila, Wersing |
| *h > ∅ | everywhere but Teiwa and W Pantar |
| *m > ŋ / _# | W Pantar, Blagar, Adang |
| *n > ŋ / _# | Klamu, Kaera, W Pantar, Blagar, Adang, Abui, Kamang, Sawila, Wersing |
| *l > i / _# | Teiwa, Kaera, Adang, Kamang |
| *l > ∅ / _# | Klamu, W Pantar, Abui |
| *r > l / V_V | Klamu, W Pantar, Adang, Kamang |
| *r > i / _# | Blagar, Kui, Abui |

Table 8: Sound changes in Alor Pantar languages observed by Holton et al. (2012: 113).

# COMPUTATIONAL TREE (ROBINSON & HOLTON 2012)

- Small data set (12 varieties)
- Pantar subgroup
- East Alor again embedded in Alor subgroup
- Blagar again groups with Alor

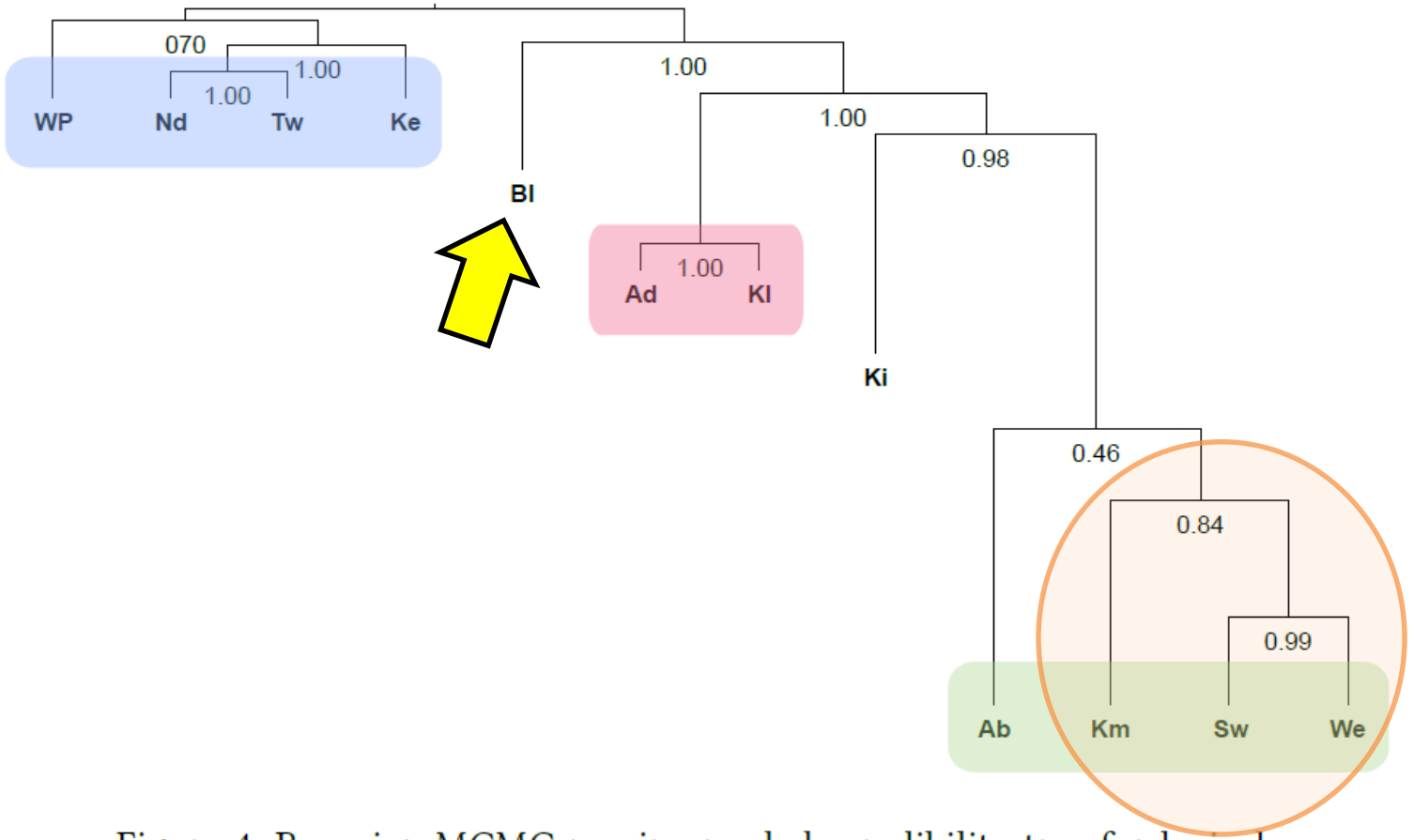



Figure 4: Bayesian MCMC maximum clade credibility tree for lexical data (relaxed Dollo model), with clade credibility values indicated. pAP node omitted

# DIFFERENCES WITH OUR TREE

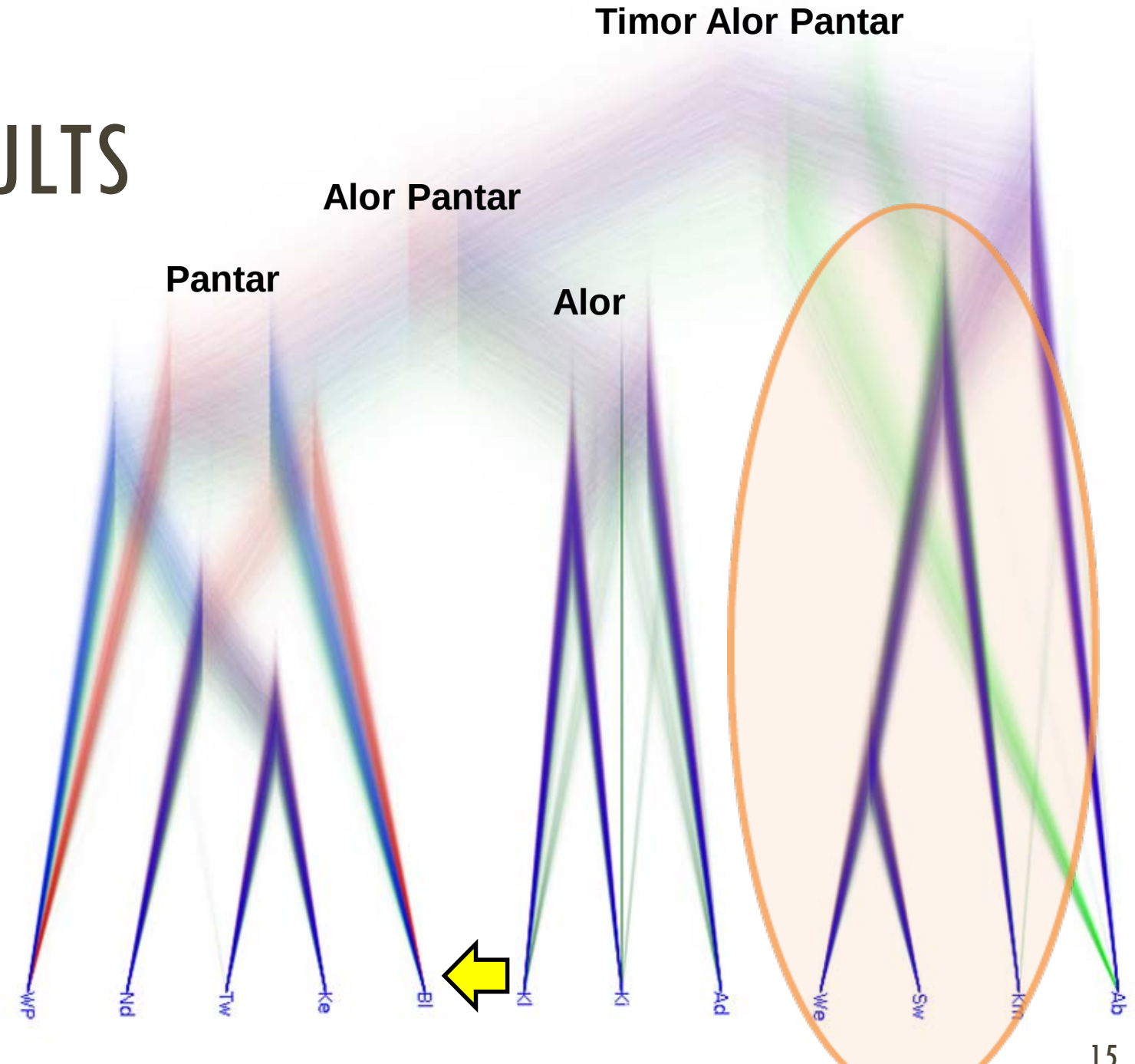
- Manual cognate coding
- Manual exclusion of loans
- Proto AP used as the outgroup
- Model of change: stochastic Dollo

# REPLICATION OF ROBINSON & HOLTON 2012

- Does granularity of data make the difference?
  - Replication used identical data set: 12 varieties, ~200 items each
- Automatic instead of manual cognate coding
- Slightly different model of change: **pseudo-**Dollo covarion
- No proto-AP as outgroup
  - Strict clock to find root

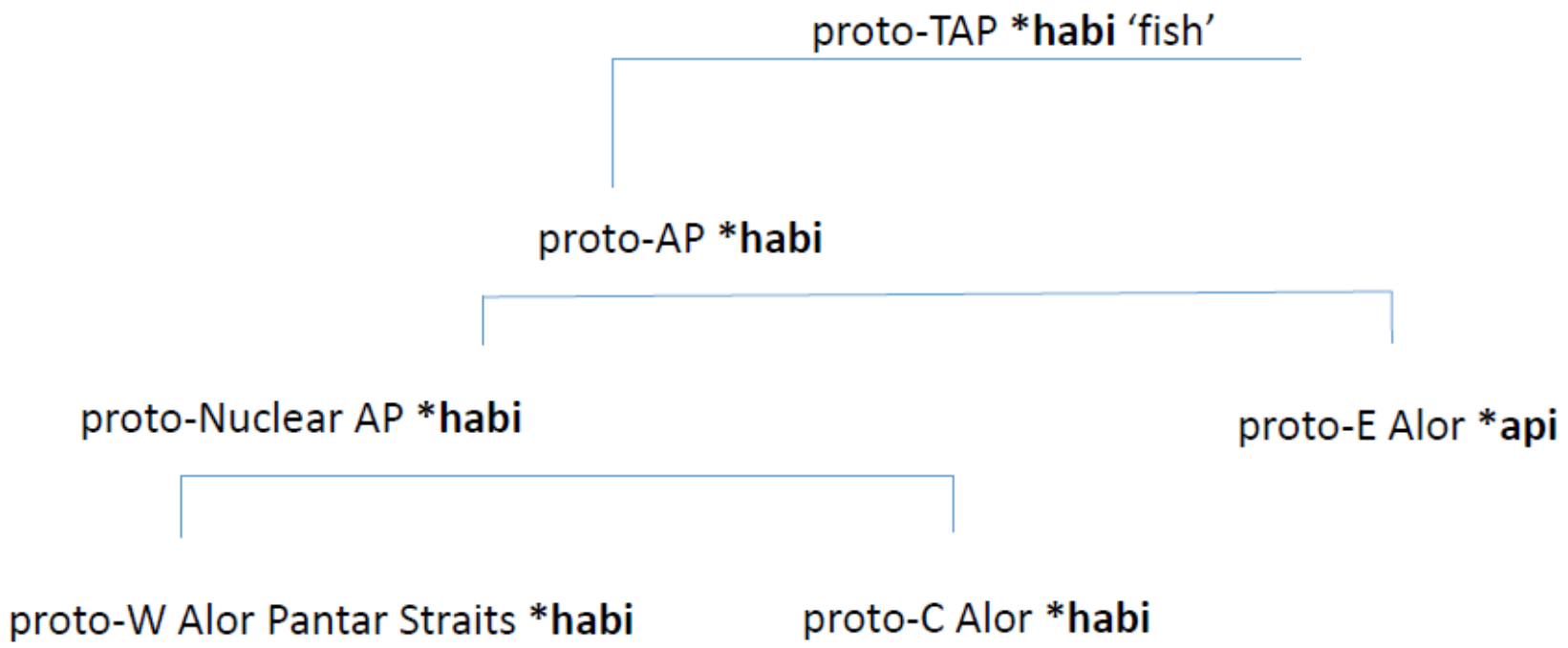
# REPLICATION RESULTS

- E Alor splits early
- Blagar groups with Pantar (but not deeply embedded)



# INNOVATION IN PROTO-EAST ALOR

*b > p (initial, medial, final) is a regular sound change in E Alor (Holton et al. 2012:93)




('fish', 'sugarcane', 'tongue', 'new')

| Language | Forms reflecting *habi 'fish' | Reconstructions |
|---|---|---|
| | | proto-TAP *habi 'fish' |
| Bunak | (ikan) | proto-Timor *hapi |
| Makasae | afi | |
| Oirata | ahi | |
| Fataluku | api | |
| | | proto-AP *habi |
| Kamang-Atoitaa | api | proto-East Alor *api |
| Wersing | api | |
| Kula | api, apu | |
| Sawila | api | |
| | | proto-Nuclear AP *habi |
| Klon-Bring | əbi | proto-Central Alor *habi |
| Klon-Hopter | ʔəbi | |
| Kiraman | ɛb | |
| Kui | eb | |
| Kafoa-Probur | afoi | |
| Abui | afu | |
| Adang-Lawahing | ab | proto-W Alor Pantar *hab |
| Adang-Otvai | hab | |
| Hamap-Moru | ʔab | |
| Kabola-Monbang | hab | |
| Blagar (all dialects) | aba:b | |
| Reta | ab | |
| Reta | ʔab | |
| Sar | haf | |
| Teiwa-Adiabang | haf | |
| Teiwa-Lebang | af | |
| Teiwa-Nule | haf | |
| Deing | haf | |
| WesternPantar-Tubbe | hap keʔe | |

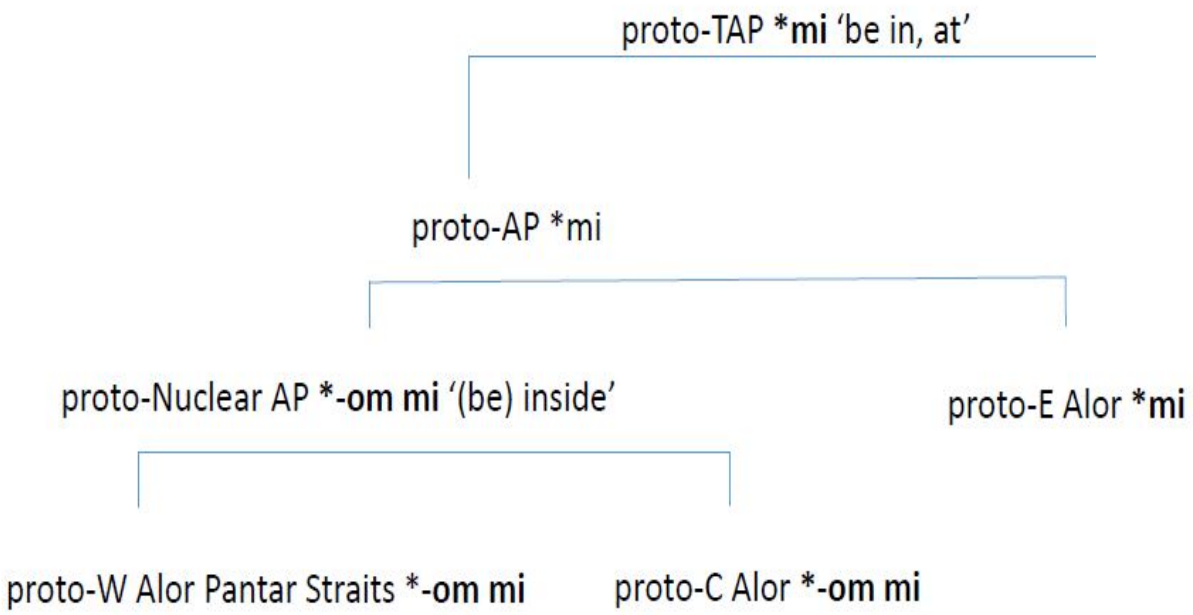
(Schapper et al. 2017: 138, 142)

(Holton et al. 2012: 93)

Cognate sets of proto-TAP *habi 'fish' and reconstructions of intermediate forms

# INNOVATION IN NUCLEAR AP, WITHOUT E ALOR

*mi ‘be in, at’ > *mi* ‘be in, at’
*-om mi* ‘inside’



| Language | Forms reflecting *mi | Forms reflecting *om mi | Reconstructions |
|---|---|---|---|
| | | | proto-TAP *mi 'be in, at' |
| | | | proto-Tim *mi |
| Bunak | mil 'inside' | | |
| Makasai | mi- 'APPL', (mutu?u) | | |
| Makalero | mi- 'APPL', (mutu?) | | |
| Oirata | (muwainani) | | |
| Fataluku | (mutune) | | |
| | | | proto-AP *mi |
| Kamang-Atoitaa | mi-'APPL', mi 'inside' | | proto-East Alor *mi |
| Wersing | mi- 'APPL', mira 'inside', min 'be at' | | |
| Kula | m 'be located', məra 'inside' | | |
| Sawila | ming 'be located', mirea 'inside' | | |
| | | | proto-Nuclear Alor Pantar *-om mi '(be) inside' |
| Klon-Bring | mi 'be at; to place', mi 'LOC', mi- 'APPL' | -omi | proto-Central Alor *-om mi |
| Kui | mi- 'APPL', mi 'be in, at', mare 'inside' | | |
| Kafoa | mi 'be at' | -ommi | |
| Abui-Takalelang | mi 'be in' | -o:mi | |
| Abui-Ulaga | mia 'be in' | -oni | |
| Adang | mi 'be in, at', mi 'in, at' | ?ommi | proto-W Alor Pantar Straits *-om mi |
| Blagar-Pura | =mi, mi 'in; to; into; from' | -omi | |
| Reta | mi 'be in' | -o:mi | |
| Kaera-Abangiwang | ming 'be in, at', mi 'in; at; to; with' | -ommi | |
| Teiwa | me? 'be in' | -omme? | |
| WPantar | me 'LOC', migang 'to set' | -ume | |

# INTERNAL STRUCTURE OF EAST ALOR SUBGROUP

Kamang
- E Alor language
- lexical transfer from C Alor

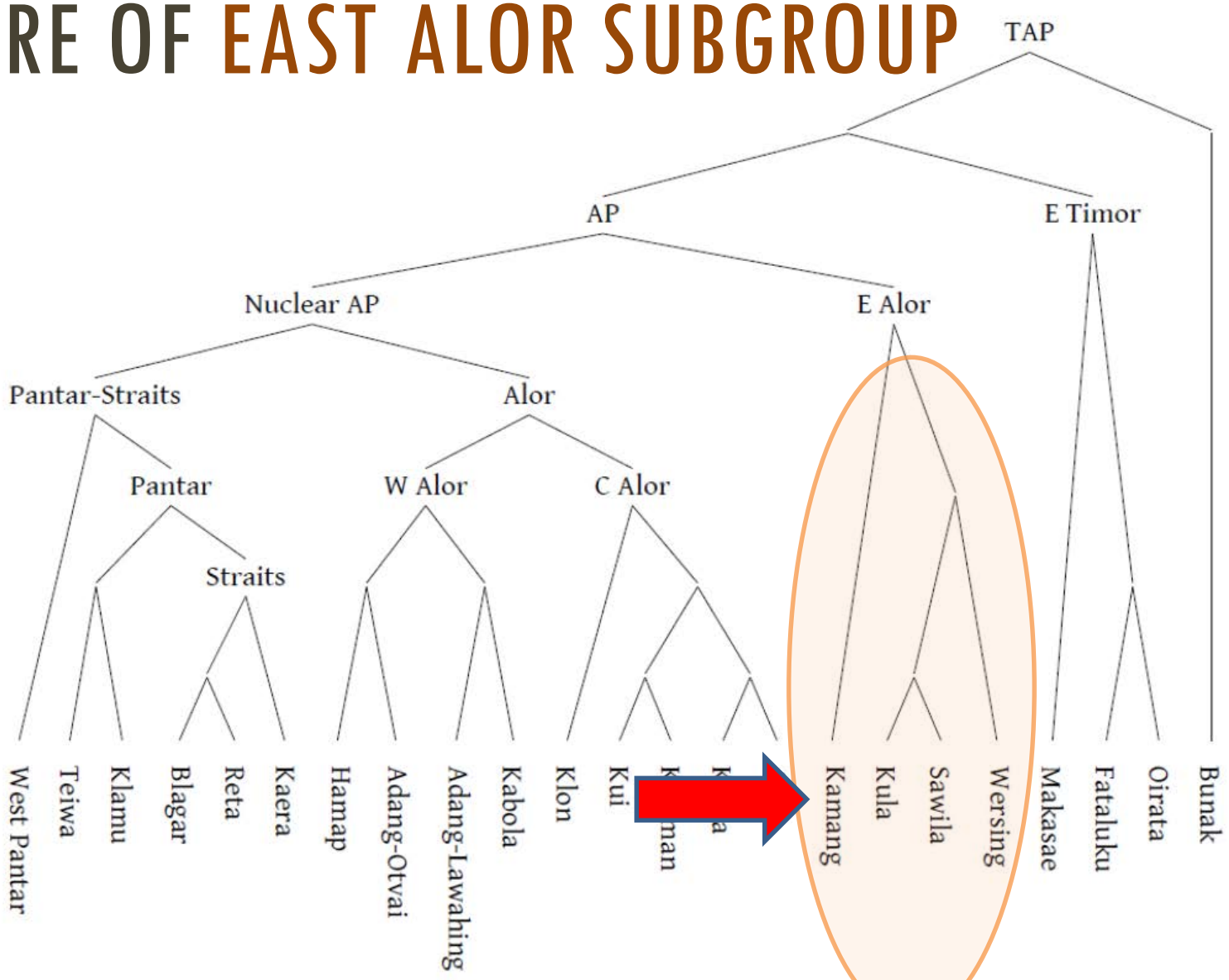
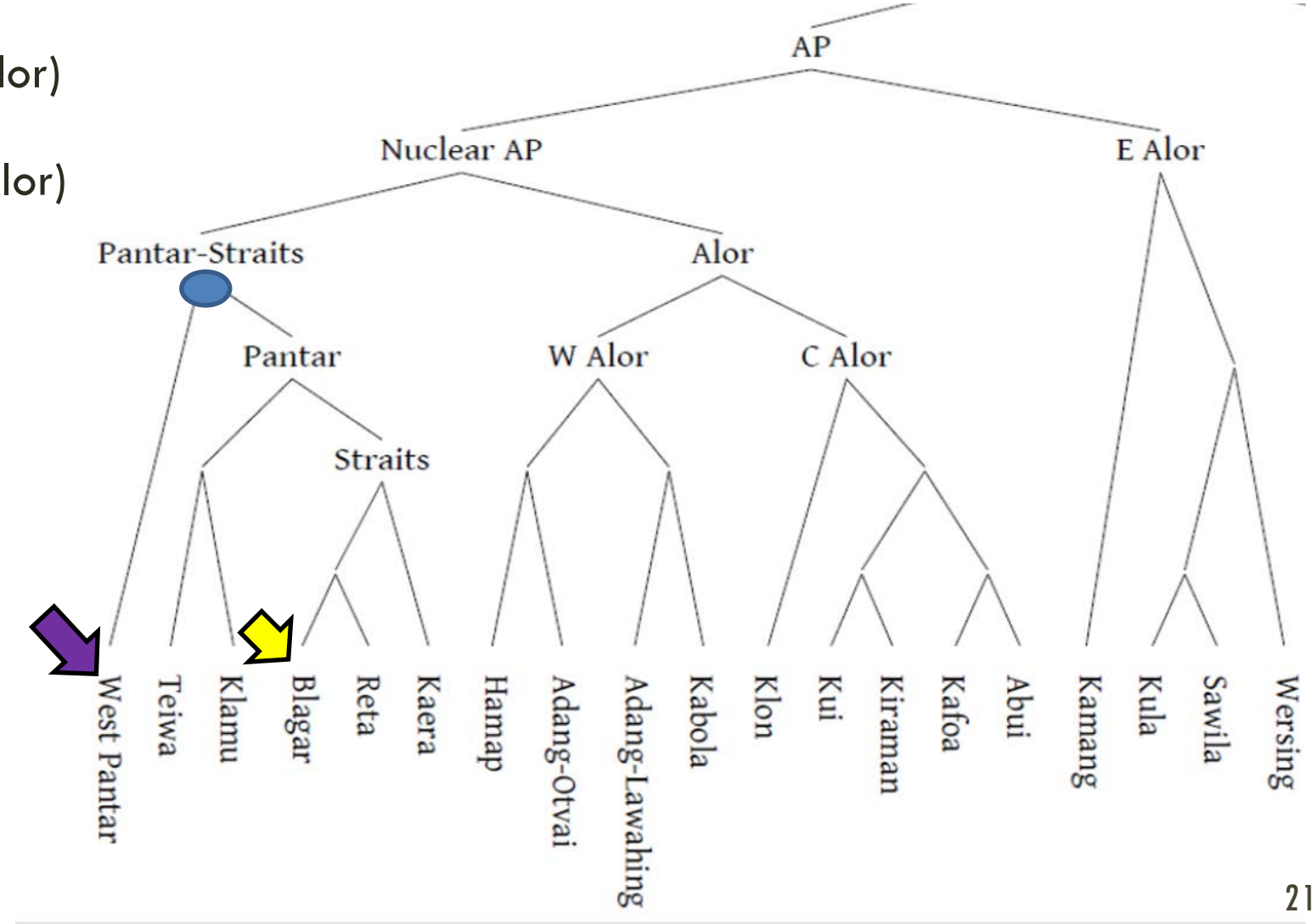


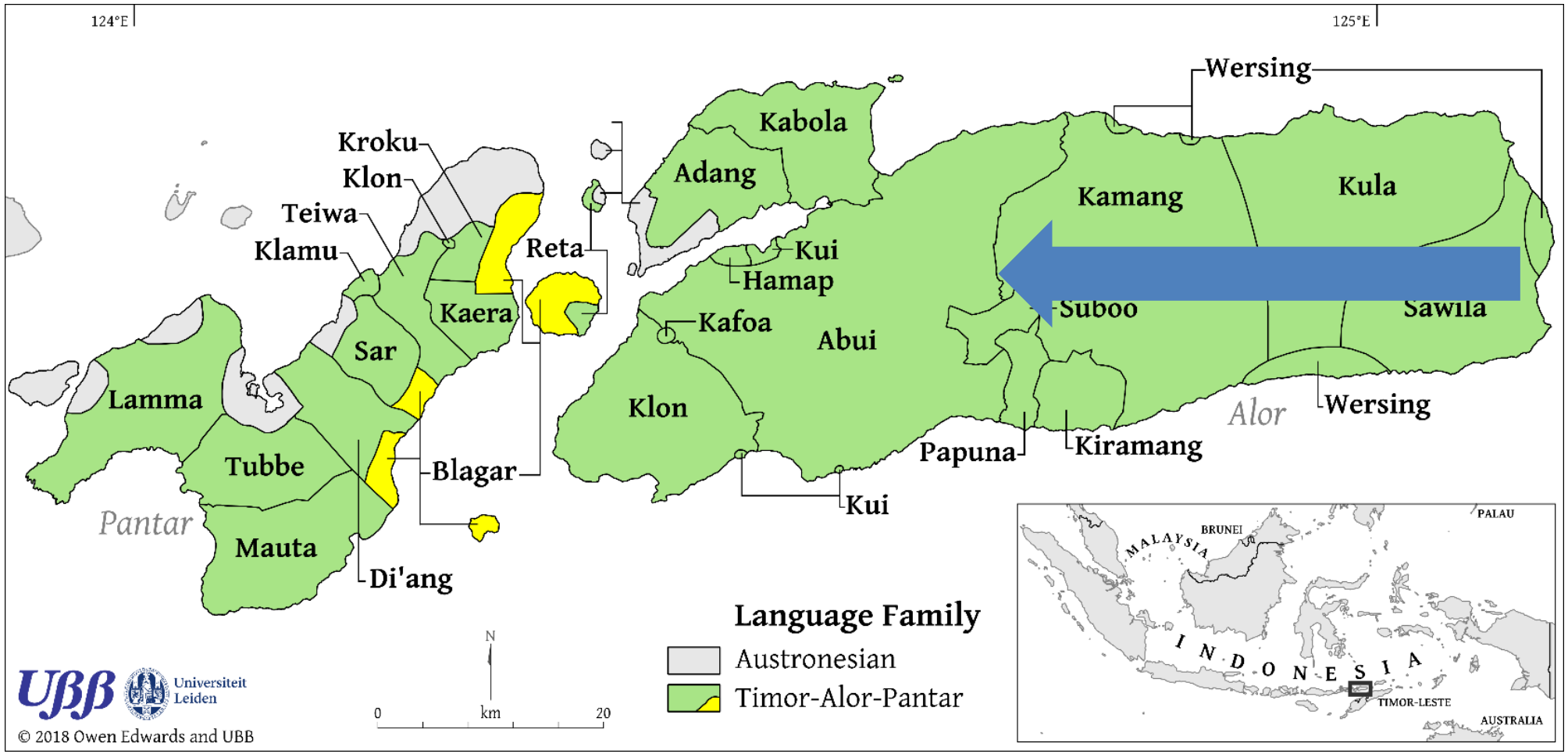

Figure 19: Subgrouping structure of the TAP language family.

# STRUCTURE OF NUCLEAR ALOR PANTAR

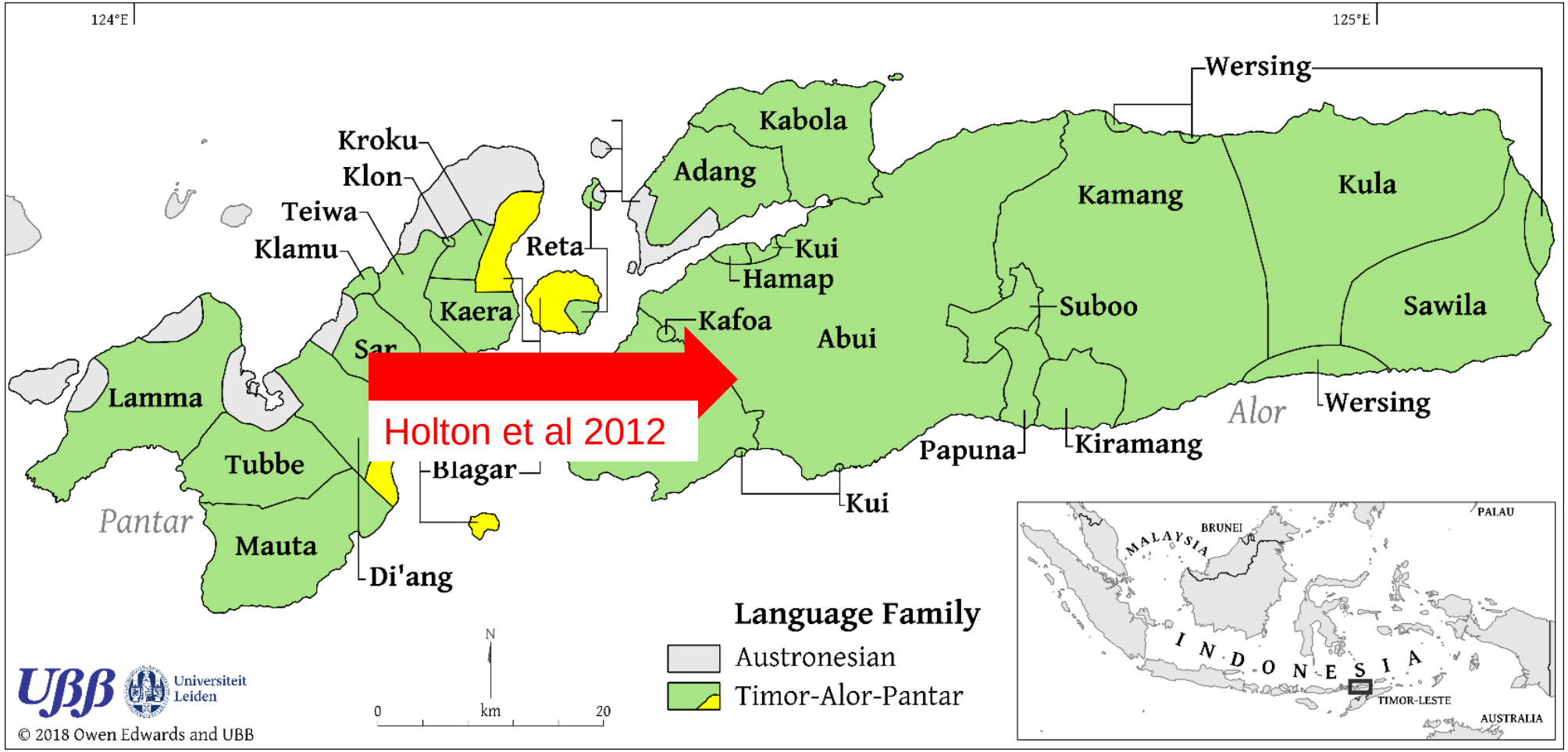
- Pantar-Straits node (not Straits-Alor)
- Blagar in Pantar-Straits (not W Alor)
- Unclear status of W Pantar



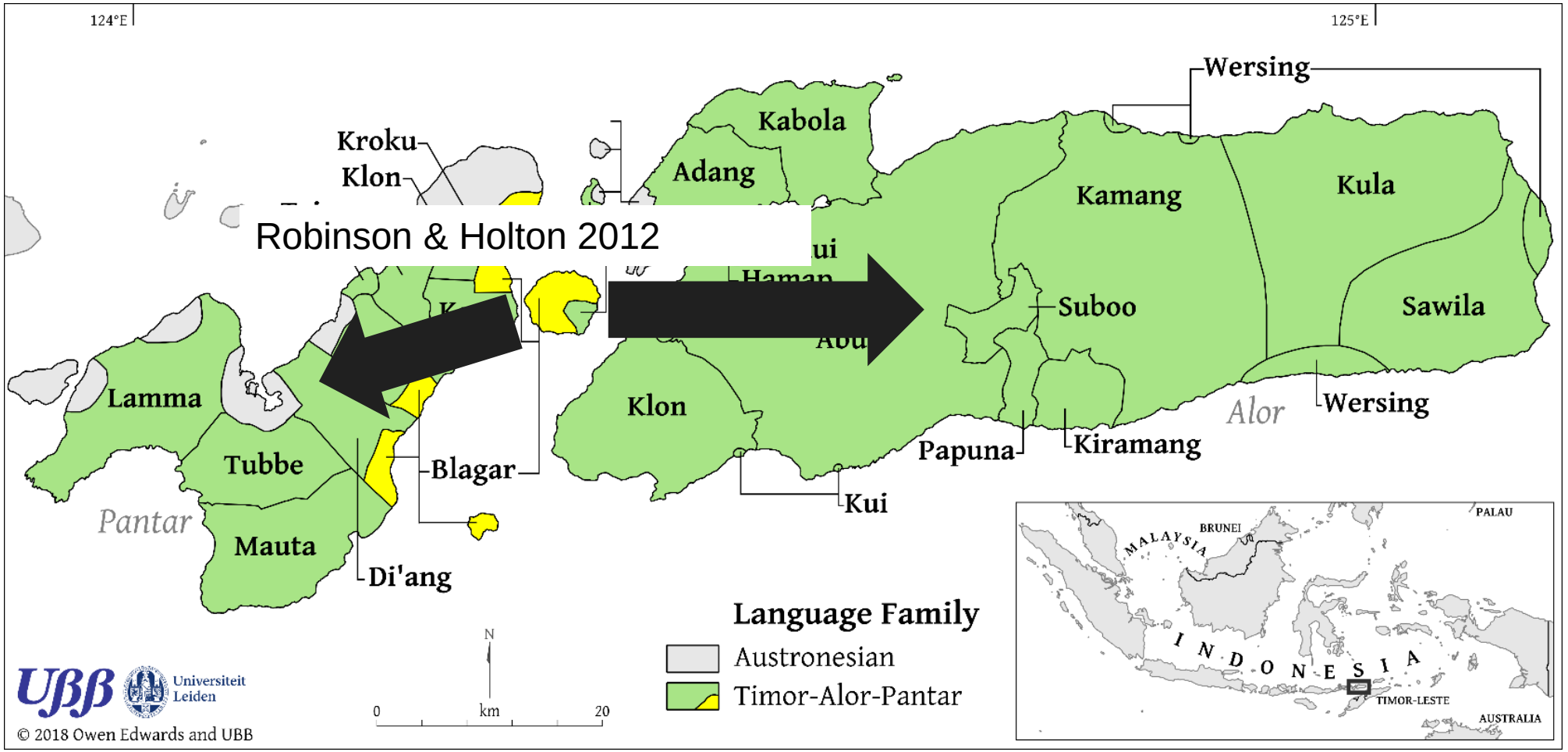
# HOMELAND AND MIGRATIONS



# HOMELAND AND MIGRATIONS



# HOMELAND AND MIGRATIONS



# CONCLUSIONS

Genealogies of inferred historical connections between languages depend on

1. granularity of data
2. methodological choices, in particular...
   - weighting of conflicting sound changes
   - choice of rooting methodology

- Different choices lead to different trees lead to different histories
- Rigourous evaluation of data & methods is crucial for robust results

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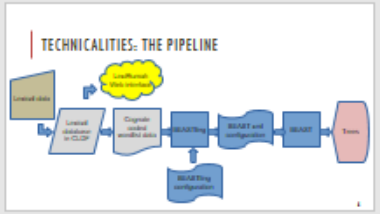

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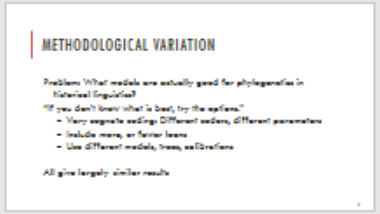

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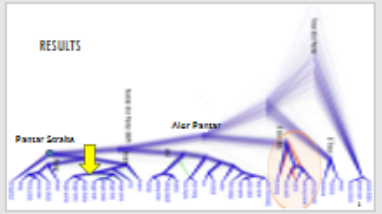

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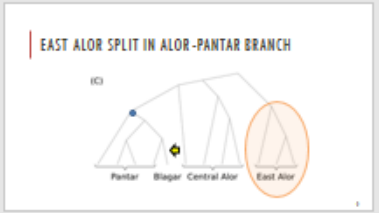

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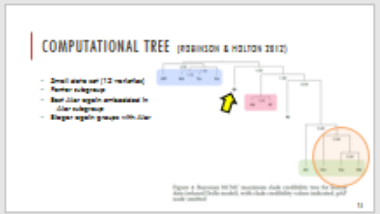

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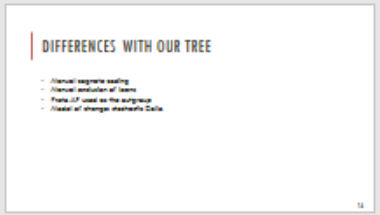

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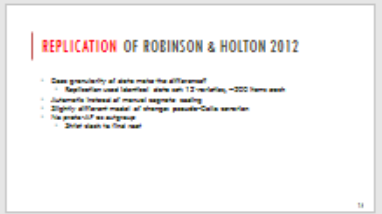

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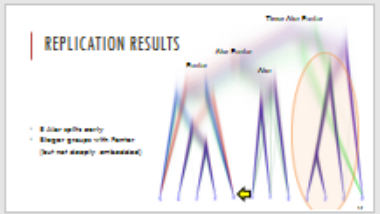

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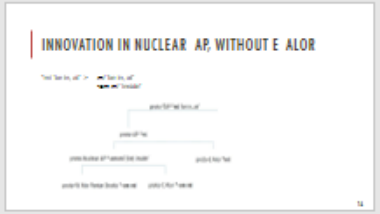

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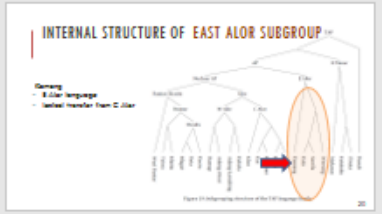

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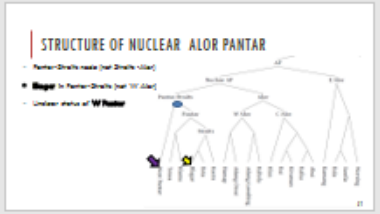

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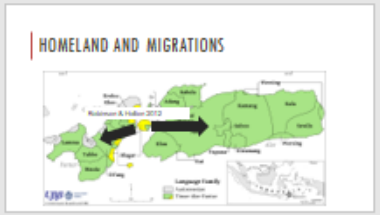

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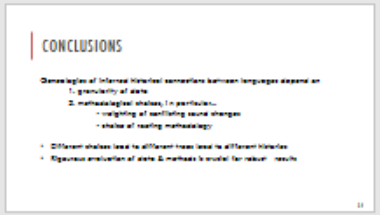

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- Holton, G, M. Klamer, F. Kratochvíl, L. C. Robinson, and A. Schapper. 2012. “The Historical Relations of the Papuan Languages of Alor and Pantar.” *Oceanic Linguistics* 51 (1): 86–122.
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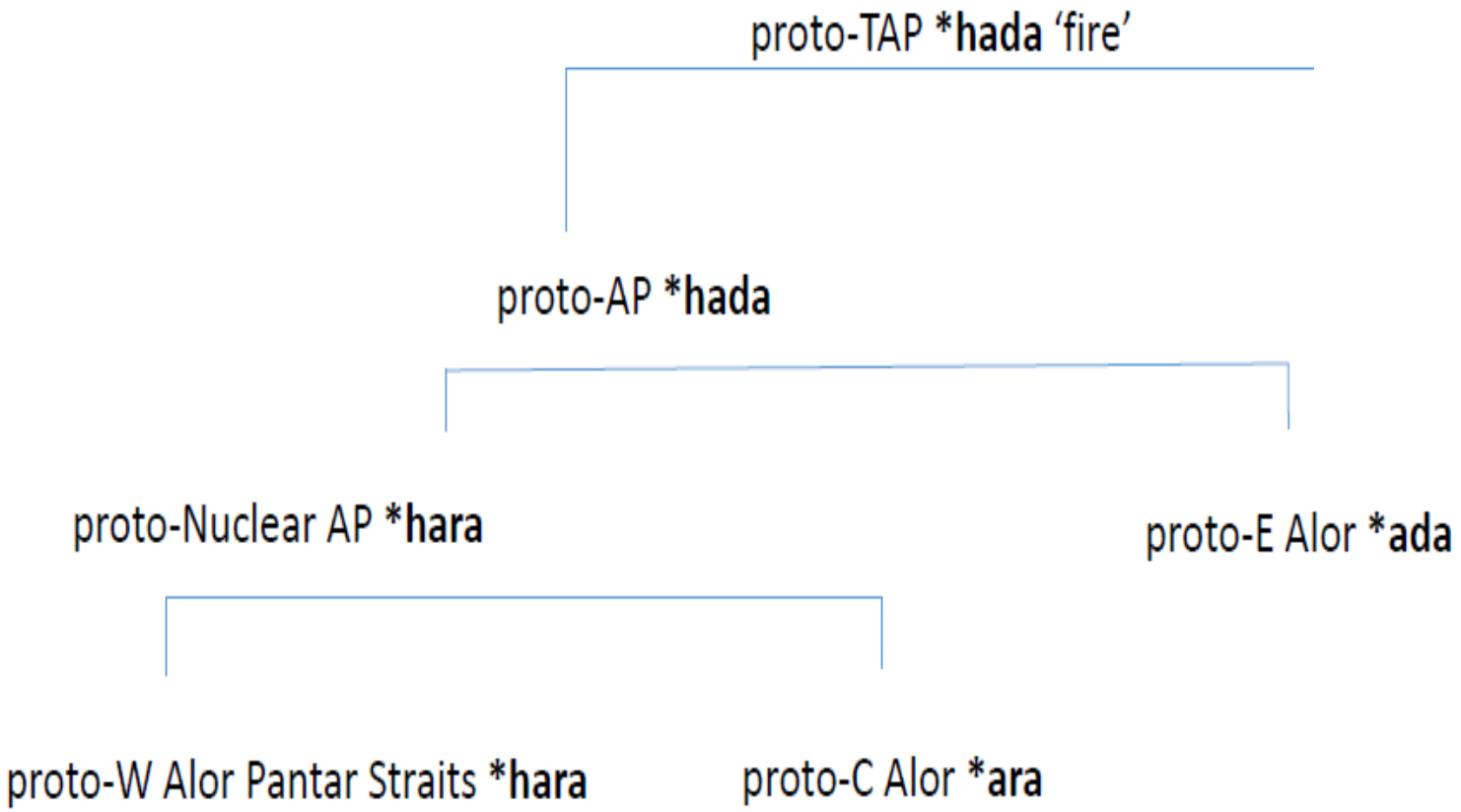
***d>t in Tim and d>r in AP (less certain in Holton et al. 2012, Schapper et al. 2017)**



| Language | Forms reflecting *hada 'fire' | Reconstructions |
|---|---|---|
| | | proto-TAP *hada 'fire' |
| Bunak | hoto hoto | proto-Timor *hata |
| Makasai | ata | |
| Oirata | aa | |
| Fataluku | at | |
| | | proto-AP *hada |
| Kamang-Atoitaa | at | proto-East Alor *ada |
| Wersing | ada | |
| Kula | ada | |
| Sawila | ada | |
| | | proto-Nuclear AP *hara |
| Klon-Bring | ədɑ | proto-Central Alor *ara |
| Klon-Hopter | ada (wer) | |
| Kiraman | ar | |
| Kui | ar | |
| Kafoa | ɑrɑ | |
| Abui | ara | |
| Adang | (awai,a?fai) | proto-W Alor Pantar Straits *hara |
| Kabola | (awal) | |
| Hamap | (afail) | |
| Blagar-Pura | ad | |
| Reta | ad | |
| Kaera-Abangiwang | ad wasing | |
| Teiwa | ar | |
| WPantar | ra | |

(Schapper et al. 2017: 98; less certain)

(Holton et al. 2012: 98)