

On the History of Numerals and Numeral Systems in Alor-Pantar

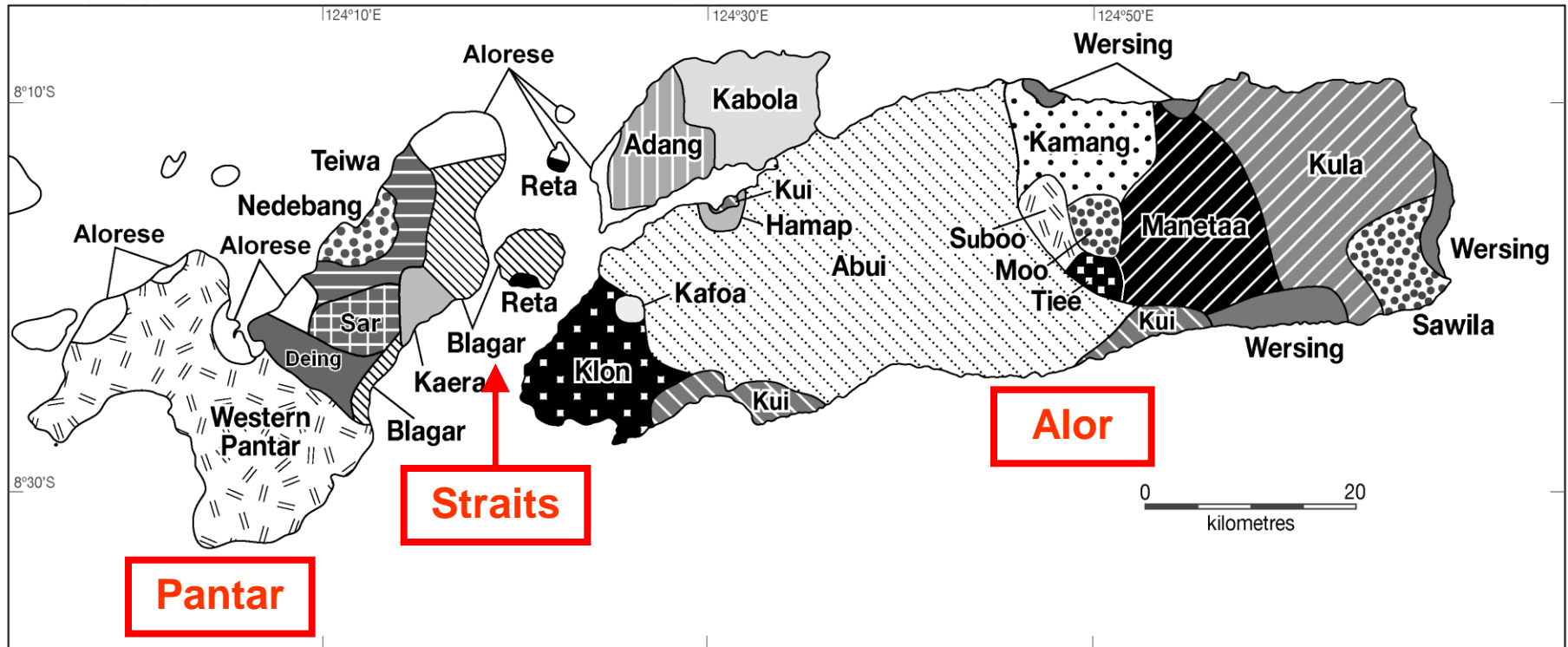
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EuroBabel workshop *Methodology in Linguistic Prehistory*
Humboldt Universität zu Berlin, 14-16 October 2011

Geographical context



The Alor-Pantar languages



This talk

History of AP numeral bases 1-9

Dataset: ~400 item word list of 16 varieties

- Analysis of numeral systems in modern AP languages
- Reconstruction of numeral forms and the proto-AP numeral system
- Identification of innovations and borrowings
- Morphological study can enrich the picture of sub-grouping that is provided by the study of sound changes

Numerals 1-5

		1	2	3	4	5
pAP		*nuku	*araq	*(a)tiga	*(b/b)uta	*yiwesing
Pantar	W Pantar	anuku	alaku	atiga	atu	yasing
	Deing	nuk	raq	atig	ut	asan
	Sar	nuk	raq	tig	ut	yawan
	Teiwa	nuk	(ha)raq	yerig	ut	yusan
	Kaera	nuko	raxo	tug	ut	isin
Straits	Blagar-Bama	nuku	akur	tuge	ut	ising
	Reta	anu	alo	atoga	w/buta	avehang
W Alor	Kabola	nu	olo	towo	ut	iweseng
	Adang-Pit.	nu	alo	tuo	ut	ifihing
	Hamap	nu	alo	tof	ut	ivehing
	Klon	nuk	orok	tong	ut	eweh
	Kui	nuku	oruku	siwa	usa	yesan
C&E Alor	Abui	nuku	ayoku	sua	buti	yeting
	Kamang	nok	ok	su	biat	iwesing
	Sawila	sundana	yaku	tuo	araasiiku	yooting

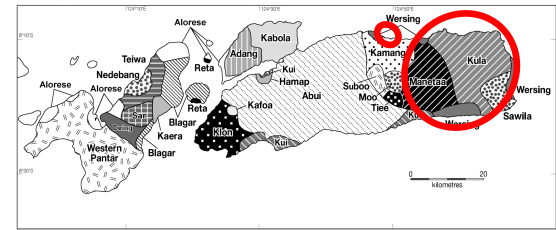
Numeral 6

		Simplex	Complex
pAP		*talam	
Pantar	W Pantar		hisnakkung
	Deing	talang	
	Sar	teyang	
	Teiwa	tiaam	
	Kaera	tiam	
Straits	Blagar-B	tayang	
	Reta	talaun	
W Alor	Kabola	talang	
	Adang-P	talang	
	Hamap	talang	
	Klon	tlan	
	Kui	talama	
C&E Alor	Abui	talaama	
	Kamang	taama	isingnok
	Sawila		yootingsundana

Mono-morphemic '6'

- pAP *talam '6' is mono-morphemic
- Cognate Bunaq (Timor) *tomol* '6'
- Base-5 system originates from fingers of one hand
- Numeral '6': crossing over from one hand to the other
- '6' etymologically be related to 'cross over' words
(Majewicz 1981, 1984, Lynch 2009: 399-401)
- pTAP *talam may have been a 'cross-over' verb
- Cf. Sawila (east Alor) *talamang* 'step on, change legs (in dance)'

6 as '5+1'



- Etymological '6' replaced in E-Alor languages with 5+1:

Sw: *yootingsundana* '6' < *yooting* '5',

Kula: *yawatensona* '6' < *yawetena* '5',

LKa: *isingnok* '6' < *iwesing* '5',

We: *wetingnung* '6' < *weting* '5',

sundana '1'

sona '1'

nok '1' <pAP **nuku*'1'.

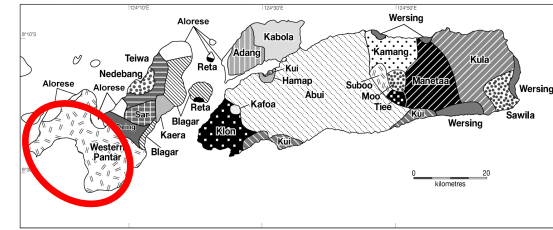
nung

<pAP**nakung* 'single')

This is a recent (areal) innovation

- Transparent composition
- Non-etymological morphemes

6 as '5+1'



- Independent replacement in Western Pantar:

WP: *hisnakkung* '6':

his + *nakkung* (*nakking* 'be single, alone'
< pAP **nakung* 'single').

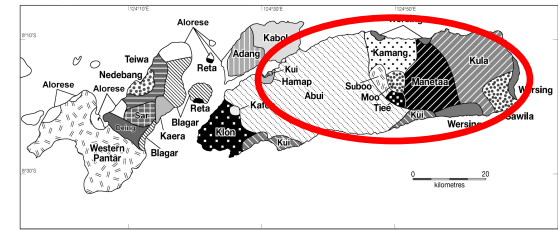
Numerals 7-9

		7	8	9
Pantar	W Pantar	betalaku	betiga	anukutannang
	Deing	yewasrak	santig	sanut
	Sar	yisraq	yinatig	yinaut
	Teiwa	yesraq	yesnerig	yesna?ut
	Kaera	yesraxo	yentug	yenut
Straits	Blagar-B	titu	tuaru	turinu
	Reta	bititoga	tulalo	tukanu
W Alor	Kabola	wuitto	turlo	ti?inu
	Adang-P	itito	turlo	ti?enu
	Hamap	itito	turalo	tieu
	Klon	usong	tidorok	tukainuk
	Kui	yesaroku	tadusa	yesanusa
C&E Alor	Abui	yetingayoku	yetingsua	yetingbuti
	Kamang (L)	isingok	isingsu	isingbiat
	Sawila	yootingyaku	yootingtuo	yootingaraasiiku

Additive base-5

		7	8	9
Pantar	W Pantar			
	Deing	yewasrak	santig	sanut
	Sar	yisraq	yinatig	yinaut
	Teiwa	yesraq	yesnerig	yesna?ut
	Kaera	yesraxo	yentug	yenut
Straits	Blagar-B			
	Reta			
W Alor	Kabola	non-transparent		
	Adang-P			
	Hamap			
	Klon			transparent
	Kui			
C&E Alor	Abui	yetingayoku	yetingsua	yetingbuti
	Kamang (L)	isingok	isingsu	isingbiat
	Sawila	yootingyaku	yootingtuo	yootingaraasiiku

Transparent 7+



- 7:

Sw: *yootingyaku* < *yooting* '5',

yaku '2'

LKa: *isingok* < *iwesing* '5',

ok '2'

Abui: *yetingayoku* < *yeting* '5',

ayoku '2'

- 8:

Sw: *yootingtuo* < *yooting* '5',

tuo '3'

LKa: *isingsu* < *iwesing* '5',

su '3'

Abui: *yetingsua* < *yeting* '5',

sua '3'

- 9:

Sw: *yootingaraasiiku* < *yooting* '5',

araasiiku '4'

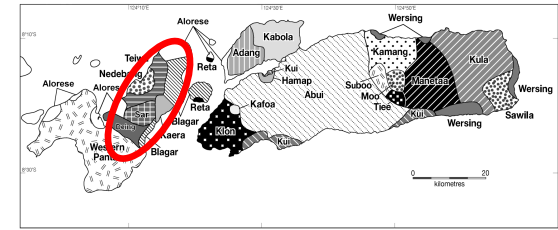
LKa: *isingbiat* < *iwesing* '5',

biat '4'

Abui: *yetingbuti* < *yeting* '5',

buti '4'

Non-transparent 7+



		7 (< 5 + 2)	8 (<5 + 3)	9 (<5 + 4)
pPantar		*yewasraqo	*yesantig	*yesanut
Pantar	Deing	yewasrak	santig	sanut
	Sar-Nule	yisraq	yinatig	yina.ut
	Teiwa	yesraq	yesnerig	yesna.ʔut
	Kaera	yesraxo	yentug	yenut

- Developments in proto-Pantar numerals:

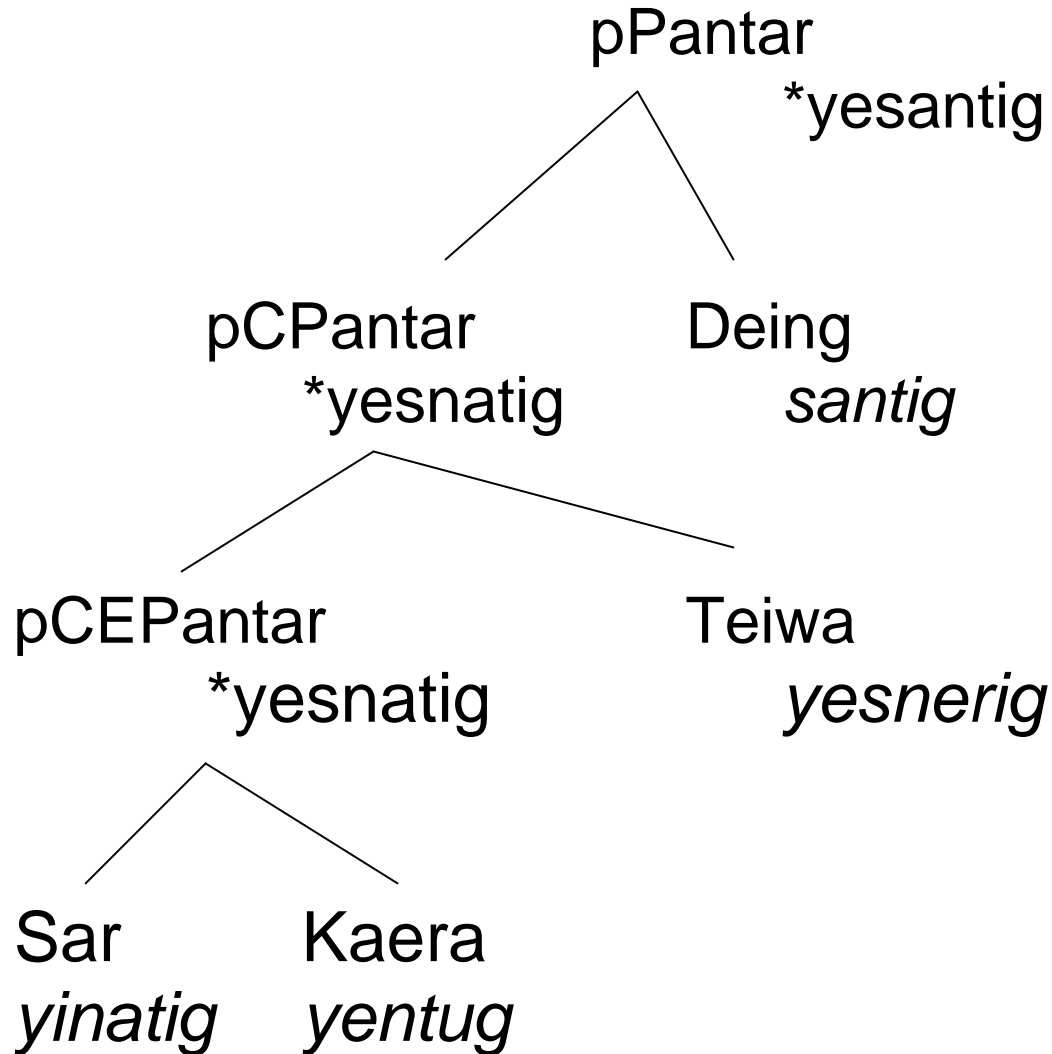
‘7’: pP *yewas**in** ‘5’ + pP *raqo ‘2’
 > pP *yewasraqo > pCP *yesraqo

‘8’: pP *yew**as**in ‘5’ + pP **a**tig ‘3’
 > pP *yesantig > pCP *yesnatig > pCEP *yenatig

‘9’: pP *yew**as**in ‘5’ + pP *ut ‘4’
 > pP *yesanut > pCP *yesnaut > pCEP *yenaut

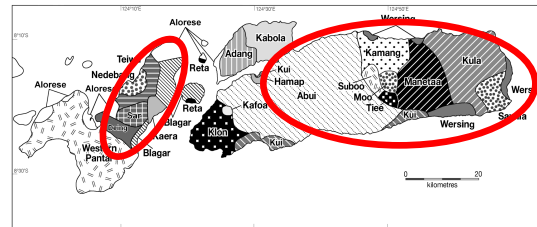
segments lost in compounding → intransparency

'8' = pP *yewasin '5' + pP *atig '3'



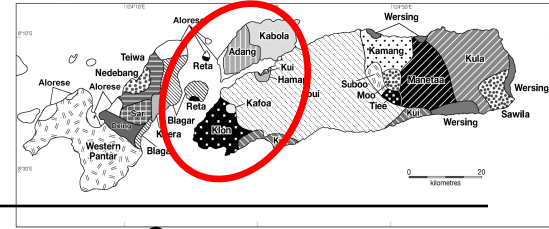
Additive base-5

- Central-eastern Alor: transparent



- Pantar: non-transparent (reductions were already present in proto-Pantar)
- The systems are identical but their morphological history is different

Subtractive base-10



7

8

9

Pantar

W Pantar

Deing

Sar

Teiwa

Kaera

Straits

Blagar-B

titu

tuakur

tukurunuku

Reta

bititoga

tulalo

tukanu

W Alor

Kabola

wutito

turlo

ti?inu

Adang-P

itito

turlo

ti?enu

Hamap

itito

turalo

tieu

Klon

usong

tidorok

tukainuk

Kui

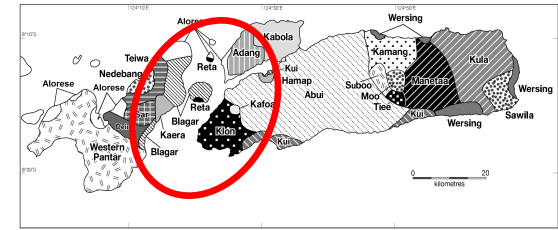
C&E Alor

Abui

Kamang

Sawila

Subtractive 8, 9



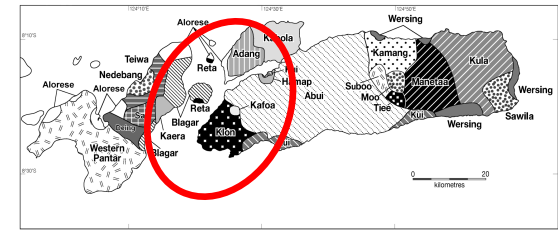
		7	8	9
proto-Straits-WAlor		*(b/b)utitoga 7[-]3	*turarok [10]-2	*tukarinuk [10]-1
Straits	Blagar-B	titu	tuakur	tukurunuku
	Blagar-D	bititu	tuaru	turinu
	Reta	bititoga	tulalo	tukanu
W Alor	Kabola	wutito	turlo	ti?inu
	Adang-P	itito	turlo	ti?enu
	Hamap	hito	turalo	tieu
	Klon	usong	tidorok	tukainuk

-kur < akur '2'
tu- < ?

-lo < alo '2'
tu(l)- < ?

-nuku < nuku '1'
tukuru- < ?

Subtractive 8, 9



- ‘8’ < pSWA ***tur-** + *aroku ‘2’.

Bl-B: *tuakur* ‘8’

akur ‘2’

Kb: *turlo* ‘8’

alo ‘2’

Kl: *tidorok* ‘8’

orok ‘2’

pre-PSWA *tukari
= ‘less, take away’

- ‘9’ < pSWA ***tukari-** + *nuku ‘1’

Bl-B: *tukurunuk* ‘9’ *nuku* ‘1’

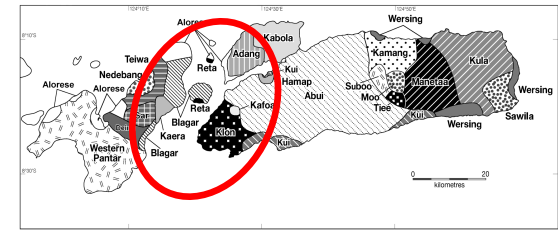
Kb: *ti?inu* ‘9’ *nu* ‘1’,

Kl: *tukainuk* ‘9’ *nuk* ‘1’

“less 1” = ‘9’

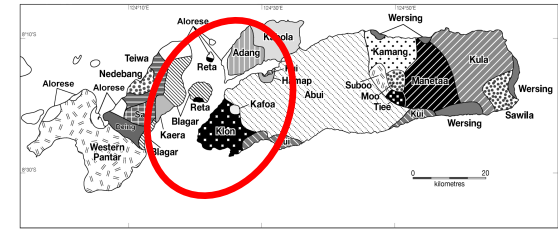
“less 2” = ‘8’

Subtractive 7



		7	8	9
proto-Straits-WAlor		*(b/b)utitoga 7[-]3	*turarok [10]-2	*tukarinuk [10]-1
Straits	Blagar-B	titu	tuakur	tukurunuku
	Blagar-D	bititu	tuaru	turinu
	Reta	bititoga	tulalo	tukanu
W Alor	Kabola	wutito	turlo	ti?inu
	Adang-P	itito	turlo	ti?enu
	Hamap	itito	turalo	tieu
	Klon	usong	tidorok	tukainuk

Subtractive 7



PSWA *(b/b)utitoga

< *b/buti

<PAN *pitu '7'

*toga

PAP *(a)tiga '3'

How can '7 3' be 7?

Bl-B: titu

Re: bititoga

Kb: wutito

Ad: itito

Hm: itito

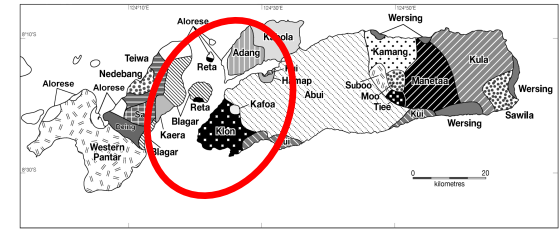
Kl: usong

Subtractive [-3] pattern

Built on a reanalyzed

Austronesian number '7'

Subtractive 7



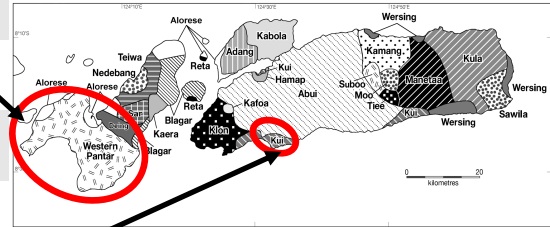
- How did this come about?

		'7'	'8'	'9'
Pre-pSWA	Stg I	[10]-3 *tukaritoga	[10]-2 *tukariarok	[10]-1 *tukarinuku
	Stg II	[7]-3 *butitoga	*tukariarok	*tukarinuku
pSWA		*butitoga	*turarok	*tukarinuk

'7' is half loan, half native
in Straits languages

7, 8, 9 Just different

		7	8	9
pAP				
Pantar	West Pantar	bet-alaku	be-tiga	anuku-tannang
	Deing			
	Sar	'7 2' '7 3' '1 less' (not: 'less 1')		
	Teiwa			
	Kaera			
Straits	Blagar			
	Reta			
W Alor	Kabola			
	Adang			
	Hamap			
	Klon			
	Kui	yesa-roku	tad-usa	yesan-usa
C&E Alor	Abui			
	Kamang			
	Sawila			



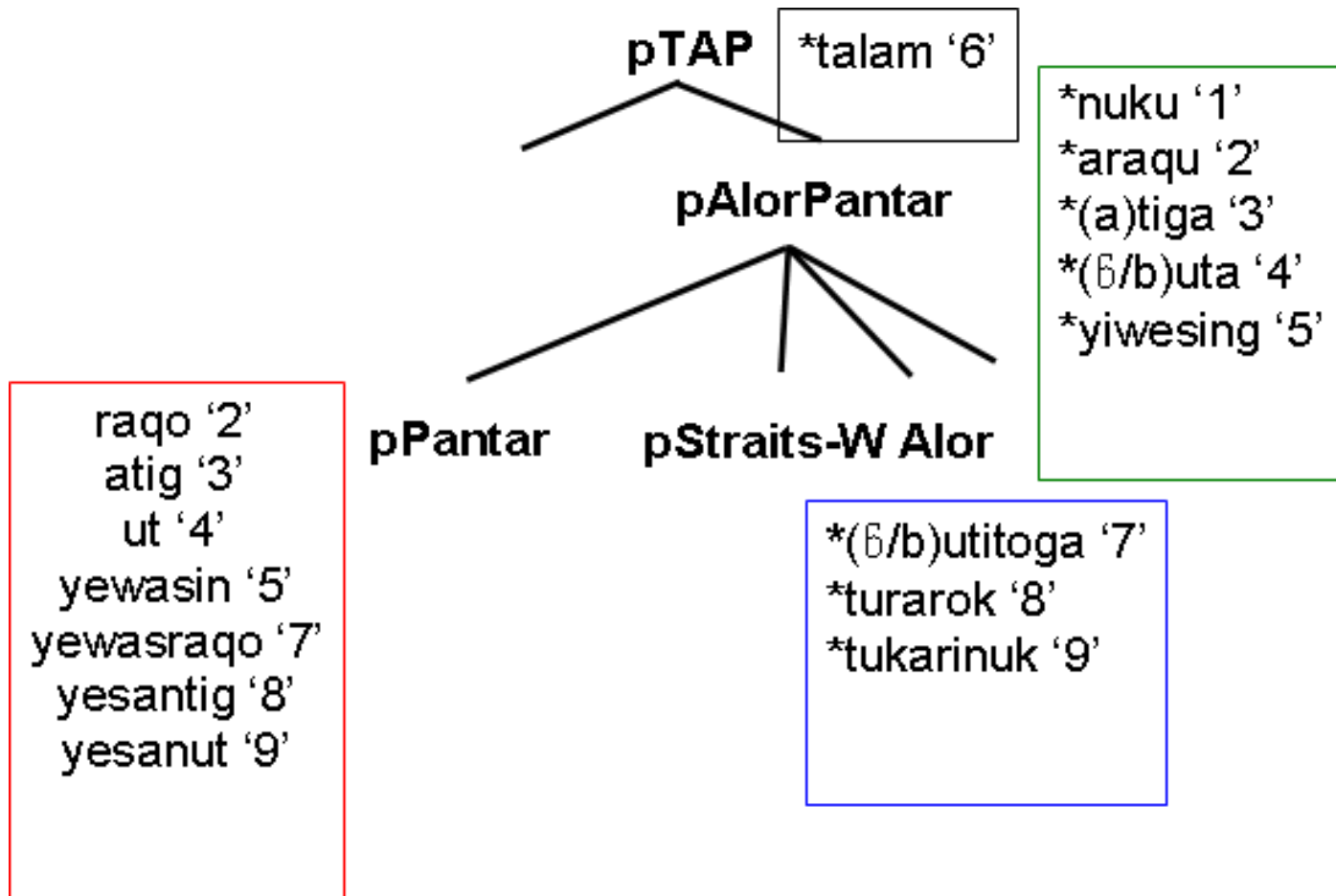
'5 2' '? 4' '5 4'

Summary: AP systems for 1-9

	5	6	7	8	9
C E Pantar	5	6	5+2 opaque	5+3 opaque	5+4 opaque
Straits- W Alor	5	6	7[-]3	[10]-2	[10]-1
C Alor	5	6	5+2 transparent	5+3 transparent	5+4 transparent
E Alor	5	5+1	5+2 transparent	5+3 transparent	5+4 transparent

Results

1. Reconstruction of numerals of various subgroupings



Results

- 2. Reconstruction of AP numeral system:
- Mixed quinary & decimal system
- With a monomorphemic '6'

5	6	7	8	9	10
5	6	[5 2]	[5 3]	[5 4]	[10 1]

Results

- 3. Identification of innovations
 - East Alor: innovation of [5 1] ‘6’
 - Straits-W Alor: innovation of subtractive system [7 3] ‘7’ [-2] ‘8’ [-1] ‘9’
 - Kui: from subtractive system to additive base-5 system (?)
 - Western Pantar: independent developments

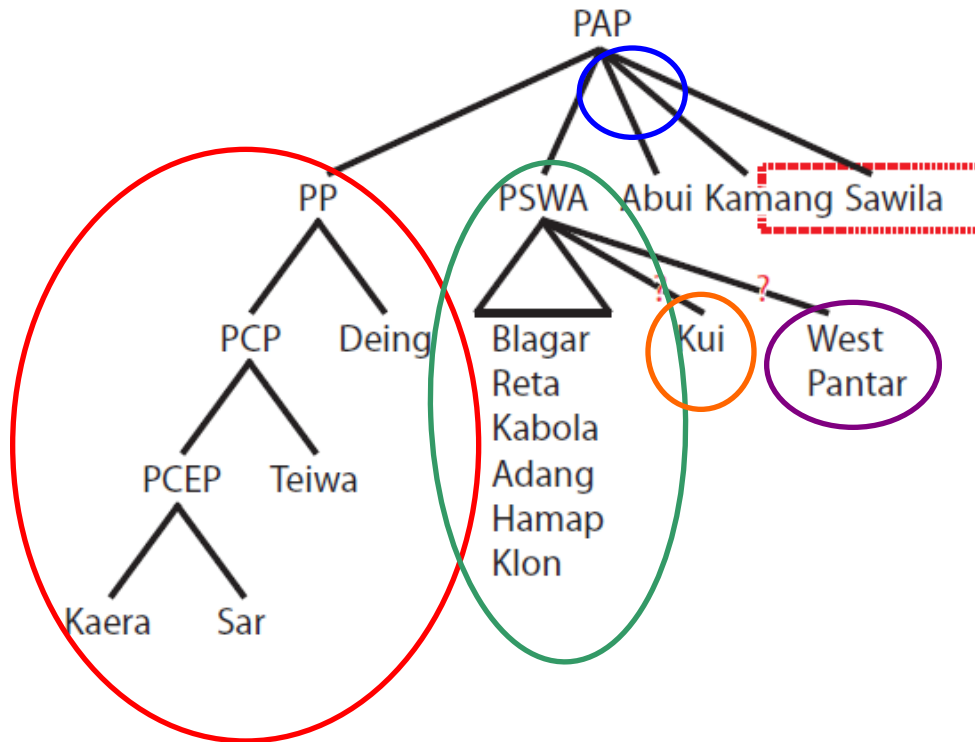
Results

- 4. Identification of (non-)loans
 - PAN *pitu ‘7’ was borrowed and reanalysed as a subtractive base in the numeral ‘7’ in Straits-W Alor languages
 - ... and further reanalysed as a base-5 in Western Pantar
 - Similarity between pAP *(a)tiga ‘3’ and Malay *tiga* ‘3’ is accidental

Results

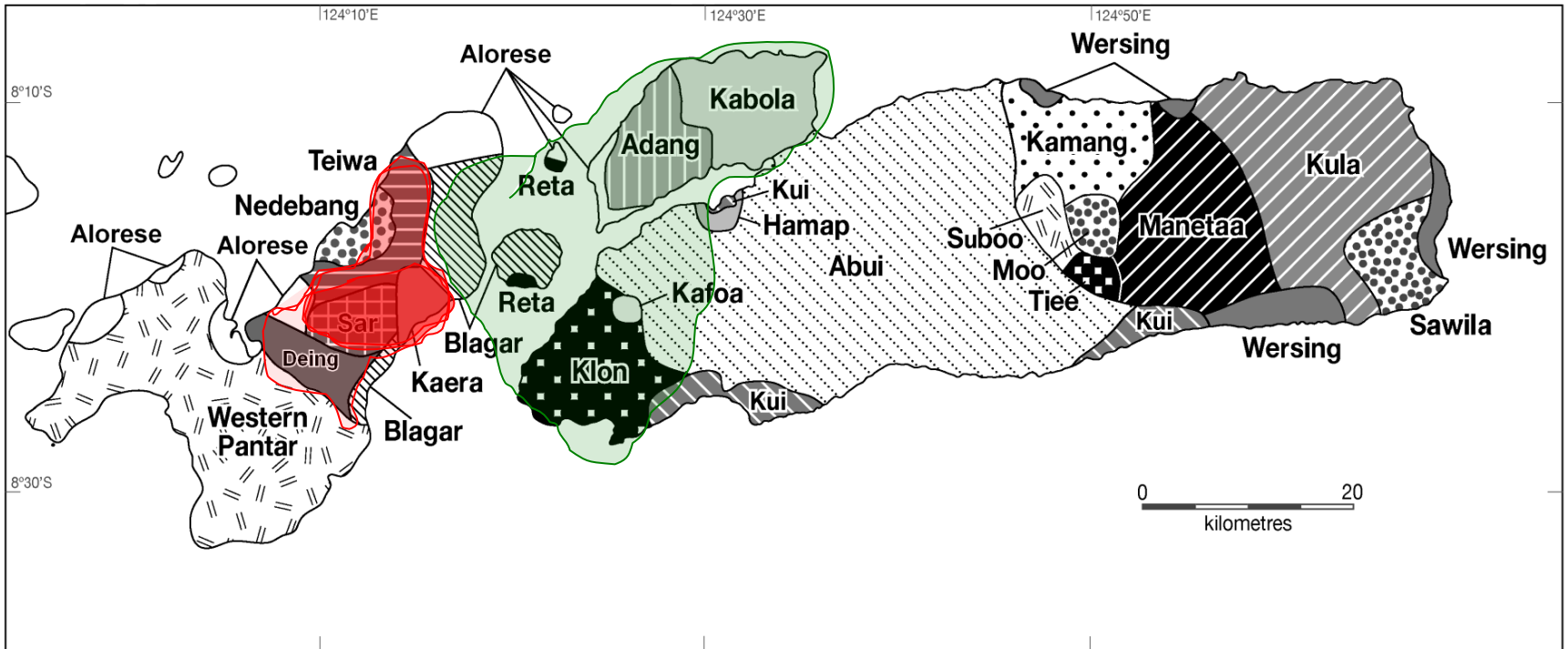
- 5. Enrichment of sub-grouping picture based on study of sound changes in AP
- Holton, Klamer, Kratochvil, Robinson & Schapper. Forthcoming. The historical relation of the Papuan languages of Alor and Pantar. *Oceanic Linguistics*.

Subgrouping of Alor-Pantar based on numerals

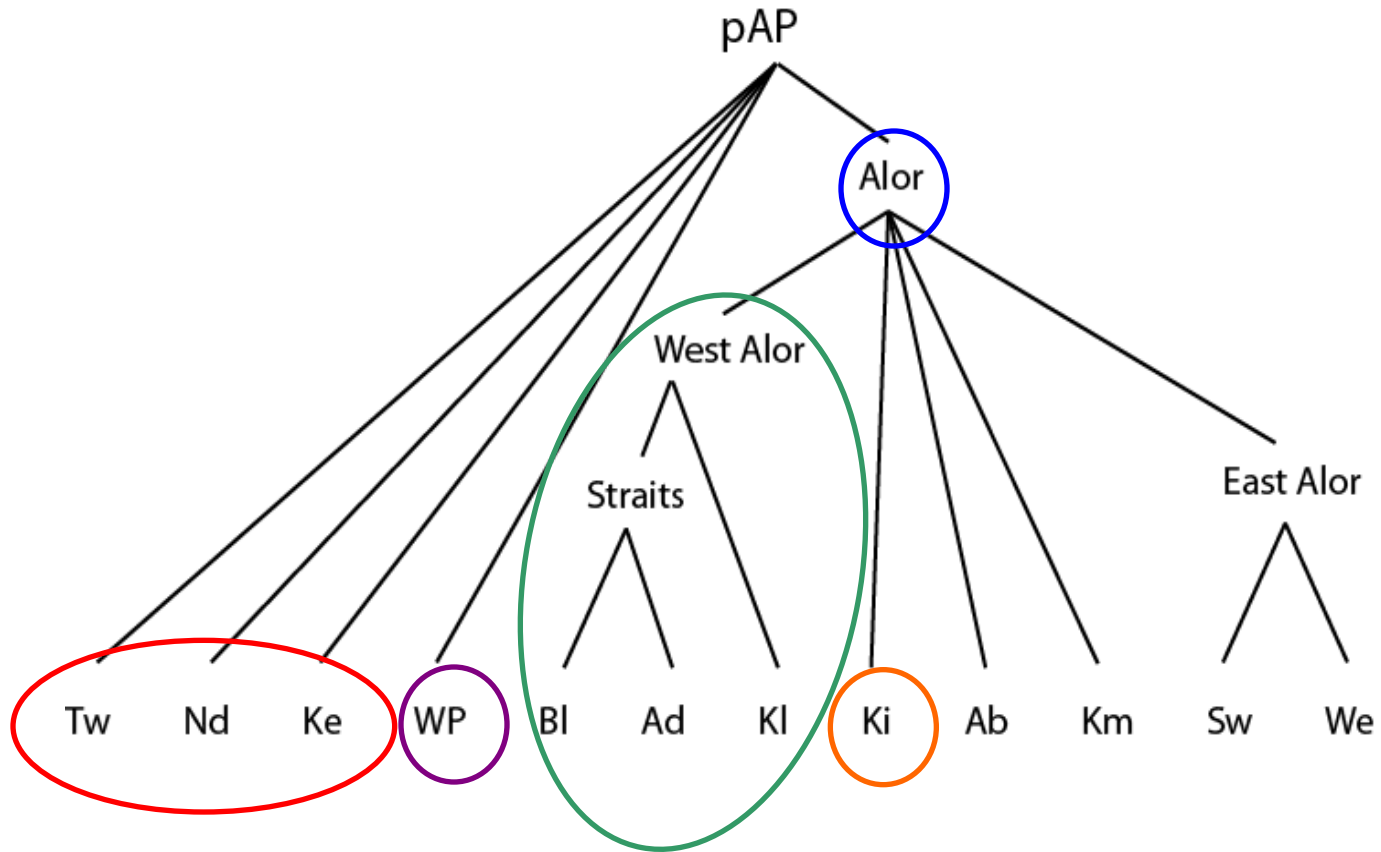


Red box: lateral transfer of numeral formation, **"?"**: unclear cases where the situation might be lateral transfer or involve different histories.

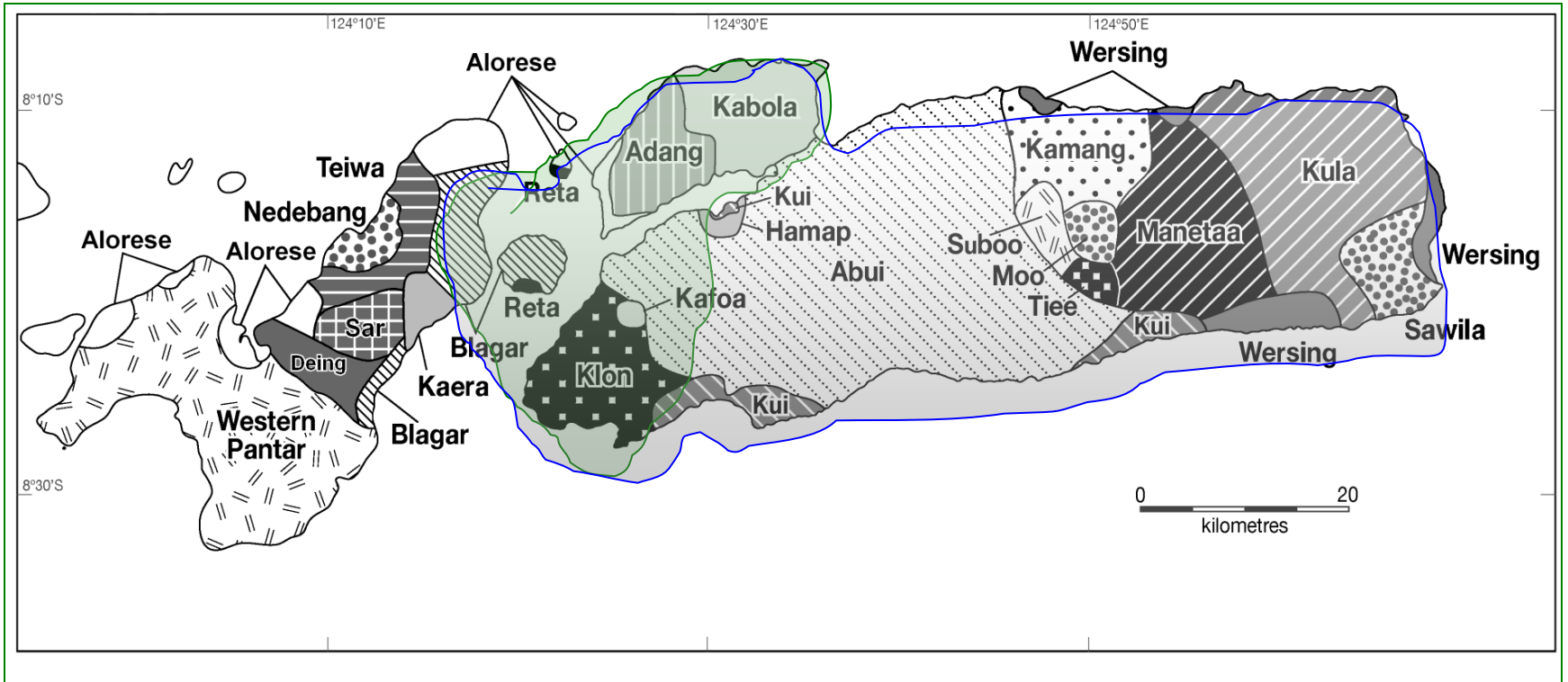
Some isoglosses based on numerals



Subgrouping of Alor-Pantar based on shared phonological innovations



Some isoglosses based on shared phonological innovations



Conclusion

- Different methodologies:
 - Study of sound correspondences and phonological innovations
 - Study of morphological correspondences and innovations (here: in numerals 1-9)
- Provide complementary information about historical relations
- Combining both methodologies gives a richer picture

Selected References

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- Blust, Robert. 2009. *The Austronesian languages*. Canberra: Pacific Linguistics.
- Forth, Gregory. 1981. *Rindi: An ethnographic study of a traditional domain in Eastern Sumba*. The Hague: Martinus Nijhoff.
- Holton, Gary, Marian Klamer, Frantisek Kratochvil, Laura Robinson and Antoinette Schapper, Forthcoming. The historical relation of the Papuan languages of Alor and Pantar. *Oceanic Linguistics*.
- Klamer, Marian. In press. *A short grammar of Alorese*. München: Lincom.
- Klinken, Catharina van. 1999. *A grammar of the Fehan dialect of Tetun*. Canberra: Pacific Linguistics.

Extra: Typology

AP and numeral typology: Base-5

East Alor

Cross-linguistic patterns of 5-9 (Hammarström p.c. 2011)

	5	6	7	8	9
Most common	5	5+1	5+2	5+3	5+4
Common	5	5+1	5+2	5+3	[10-]1
Uncommon	5	6	5+2	5+3	5+4
	5	6	5+2	5+3	[10-]1
	5	6	5+2	[10-]2	[10-]1
	5	6	[10-]3	[10-]2	[10-]1

	5	6	7	8	9
C E Pantar	5	6	5+2 opaque	5+3 opaque	5+4 opaque
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C Alor	5	6	5+2 transparent	5+3 transparent	5+4 transparent
E Alor	5	5+1	5+2 transparent	5+3 transparent	5+4 transparent

AP and numeral typology: Base-5 with simplex 6

Cross-linguistic patterns of 5-9 (Hammarström p.c. 2011)

	5	6	7	8	9
Most common	5	5+1	5+2	5+3	5+4
Common	5	5+1	5+2	5+3	[10-]1
Uncommon	5	6	5+2	5+3	5+4
	5	6	5+2	5+3	[10-]1
	5	6	5+2	[10-]2	[10-]1
	5	6	[10-]3	[10-]2	[10-]1

**C East Pantar,
C Alor**

	5	6	7	8	9
C E Pantar	5	6	5+2 opaque	5+3 opaque	5+4 opaque
Straits- W Alor	5	6	7[-]3	[10]-2	[10]-1
C Alor	5	6	5+2 transparent	5+3 transparent	5+4 transparent
E Alor	5	5+1	5+2 transparent	5+3 transparent	5+4 transparent

AP and numeral typology: Subtractive systems

Cross-linguistic patterns of 5-9 (Hammarström p.c. 2011)

	5	6	7	8	9
Most common	5	5+1	5+2	5+3	
Common	5	5+1	5+2	5+3	
Uncommon	5	6	5+2	5+3	
	5	6	5+2	5+3	[10]-1
	5	6	5+2	[10]-2	[10]-1
	5	6	[10]-3	[10]-2	[10]-1

**Straits,
West Alor**

	5	6	7	8	9
C E Pantar	5	6	5+2 opaque	5+3 opaque	5+4 opaque
Straits- W Alor	5	6	7[-]3	[10]-2	[10]-1
C Alor	5	6	5+2 transparent	5+3 transparent	5+4 transparent
E Alor	5	5+1	5+2 transparent	5+3 transparent	5+4 transparent

Conclusions

- A typologically common system
 - base-5 system with compound ‘6’
 - is found in two distinct language groups
 - as the result of two separate historical developments
- Two typologically uncommon systems
 - base-5 system with mono-morphemic ‘6’ (=pAP system)
 - complete subtractive base-10 system