# CLASSIFYING ADAMAWA LANGUAGES BY COMBINING NOMINAL MORPHOLOGY AND LEXICON

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# 1 INTRODUCTION

## Introduction

+ Adamawa languages are an important but genealogically diverse group of the Niger-Congo family, viewed as:

a) phylogenetic unit consisting of ≈14 subgroups
 (Greenberg 1963, Boyd 1989, ...)

b) no phylogenetic unit (esp. Kleinewillinghöfer 1996a, 2015)

> "genealogical pool" of 14 subgroups (Güldemann 2018)

"According to this author [Kleinewillinghöfer], the evidence for an Adamawa lineage as well as for the various subgroups is meager and unconvincing; ..." (Güldemann 2018: 202)

## Introduction

+ external relations of Adamawa languages to other groups of the Niger-Congo family - hypotheses:

a) grouped together with Ubangi (Greenberg 1963, Boyd 1989, ...)

b) shows relations to Gur (Bennett 1983, Kleinewillinghöfer 1996b, 2010, 2012, Hammarström et al. 2022)

c) no special external relation (Güldemann 2018)

## **Goal of the talk**

- to check the internal coherence of three subgroups of the supposed "Trans-Benue" (NW Adamawa) group on basis of a quantitative evaluation of the
  - lexicon
  - grammar: nominal classification
- to check the assumed relationship to one of the Central Gur groups
- to cross-check our results with an outsider group from Benue-Kwa
- to combine these results with a qualitative comparison of the deriflection systems of these groups
- and finally to discuss these results against the background of current classifications

## Language sample

#### Adamawa

A Tula-Waja (7) B Longuda (5) C Bena-Mboi (8)

Central Gur Oti-Volta East (5)

Benue-Kwa Guang (15)



#### Language sample

#### Benue-Kwa – Guang (14)

 Intact noun classification system (mostly prefixes) with agreement

 No assumed relation to either of both other groups, but contact with several Gurunsi languages (Kleinewillinghöfer 2002) Adamawa

- Longuda (5), Tula-Waja (7), Bena-Mboi (8)
- All three groups have a Niger-Congo type noun classification system with mostly suffixes
- NW periphery of Adamawa

Gur - Oti-Volta East (5)

- Kleinewillinghöfer (1996) suggests a strong relation between NW-Adamawa and Eastern Gur languages, especially Oti-Volta (cf. Bennett, who favors Gurunsi)
- Intact noun classification system (mostly suffixes) with agreement
- Spoken at the Eastern fringe of Gur

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# Methodology

- basically quantitative approach, accompanied by qualitative comparison of systems of deriflection if necessary
- fivefold comparison between all the languages included
  - lexical roots
  - nominal form marking: singular and plural
  - agreement marking: singular and plural

 $\rightarrow$  comparative table indicating cognacy values between all languages

# Methodology – number of data points

- comparative table indicating cognacy values between all languages (Figure 1)
- based on 80-word list (Leipzig-Jakarta list + additional lexemes)
  - here 73 lexemes
- no final results: still work in progress
- problems:
  - not for all languages same quality of data (sometimes missing plural form)
  - not for all languages all lexical roots known
  - AGR data missing for some languages (especially in Guang)
  - AGR not considered when based on semantics (animate vs. inanimate AGR, e.g. in some Guang languages)

# Methodology – number of data points

comparative table indicating cognacy values between all languages (see figure 1) – please give the exact numbers and average mean

	Tula-Waja (7)	Longuda (5)	Bena-Mboi (8)	Oti-Volta East (5)	Guang (15)	Gesamt
Lexical roots						
NF singular						
NF plural						
AGR singular						
AGR plural						

# Methodology

Figure 1: Comparative table indicating cognacy values between all languages (for 'neck', not all Guang languages shown)

	10-NECK																	
	root	cognate	NF SG	cognate	NF PL	cognate	AGR SG	cognate	AGR PL	cognate								
Waja Wiya	kwį	1	ì	1	ya.ŋi	2	D	1	Т	1								
Waja Sikam	kwí	1	ì	1	ya.ŋı	2	D	1	Т	1								
ula Wange/Baule	kwi	1	r	1	bi	1	D	1	Т	1								
Tula Yiri	kwii	1	1	1	wi	1	D	1	Т	1								
Bangwinji	kwi	1	t	1	ti	3	D	1	Т	1								
Cham	kwii	1	r	1	tε	3	D	1	Т	1								
Tso	kyü	1	r	1	tu	3	D	1	Т	1								
Longuda Dele	gwà	1	kV	2	ta	3	K	2	Т	1								
Longuda Guyuk	mil	2	ke	2	te	3	K	2	Т	1								
Longuda Kola	gwa	1	kV	2	ta	3	K	2	Т	1								
Longuda Ceri	mil	2	ke	2	te	3	K	2	Т	1								
onguda Gwaanda	mil	2	ke	2	te	3	K	2	Т	1								
Bena Yungur	kwe:	1	ra	1	ta	3	D	1	Т	1								
Bena Voro	kwęć	1	ra	1	ta	3	D	1	Т	1								
Bena Bode	kwęć	1	ra	1	ta	3	D	1	Т	1								
Bena Lala Yang	kwg	1	ra	1	ta	3	D	1	Т	1								
Bena Roba	kw <u>ś</u> ź	1	ra	1	ta	3	D	1	Т	1								
Mboi Gulungo	kii	1	ya	1	tà	3	Y	1	Т	1								
Mboi Haanda	kii	1	ra	1	tà	3	D	1	Т	1								
Kaan	kwee	1	r	1	təmá	3	x	x	x	x								
Ditammari	fšníí	3	kuØ	2	iØ	5	KU	4	I	2								
Mbelime	tììd	4	uu	2	ii	5	KU	4	I	2								
Nateni	fũo	3	ku	2	(j)i	б	KU	4	CI	5								
Waama	tri	4	fa	3	su	4	FA	3	SU	3								
Biali	ni	5	hú	2	hí	4	HU	4	I	2								
Gonja (1)	-bó	6	kó	2	á	2	KI	x	Α	x								

## **Methodology: R-Script**

Jaccard index: measures the similarity between two sets of data

- Set 1 x Set 2 | Language 1 (L1) x Language 2 (L2)
- L1 x L2, L1 x L3, L1 x L4, L2 x L3, ...

Intersection of  $L_n \times L_m$ (number of same cognancy-values)Union of set  $L_n \times L_m$ (number of all data-values)

# Methodology: Challenges in decision making

#### Synchronic vs. diachronic comparison

frozen affixes, e.g. Waja: biy.a-u / biy.a-ri Cham: biy-àŋ / bii-tε
merger / change of affixes: TA ≠ KA in OV East CI ≠ I in OV East KV affixes (<\*ka, \*ki, \*ku) MV affixes (<\*ma, \*mu, \*bu)</li>

#### General problems

- composed words: Ceri: zá.nyù-wa 'bird' (child.bird = bird) zu-ye + \*nyu-?
- different distributions in semantic field, e.g.
   Tula Wange: ki-r 'bush' Cham: si-i 'bush'
   Bena Lala: ki-ó 'grass' Waja: si-i 'grass'

# 2 DATA ANALYSIS

#### Relation lexical roots

- Clear clustering for each language group
- Tula-Waja and Longuda form a cluster
- No other cluster
- All languages show relations to each other
   → Niger-Congo



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#### Relation Noun Form SG

 All three Adamawa groups form a cluster

→ "Trans-Benue"?

- "Light cluster" of Oti-Volta East & Adamawa in opposition to Guang (green)
- Cluster: Gua & Nkami (Guang) with Longuda (gold)
- Cluster: Foodo (Guang) & Oti-Volta East (purple)



#### Relation Noun Form PL

- Guang, Oti-Volta East & Longuda form a cluster (blue frame)
- Longuda has least similarity with Tulaic (green frame, but cf. opposite NF SG)

	NF	_Pl	-																																					
Larteh -	36.17	31.82	13.33	9.09	27.27	10.6	10.87	25.53	30.61	23.4	33.33 3	4.09 9.3	1.54	6.52	7.14	8.7	9.3	9.3	9	44.9	35.42	34.69	30.61	35.42	68.63	75.86	59.52	62.75	82.35	90.95 75	51 75.	51 68	76	65.22	42.88	57.14	4 100			
Gua-	35	30	22.22	31.58	57.89	19.0	26.32	19.05	18.18	20	21.05 2	2.22 15.79	20	19.05	17.65	21.05	22.22	21.05	75	27.27	23.81	31.82	22.73	14.29	50	61.11	50	41.67	45.83	14.44 52	38 5	55.56	3 50	52.38	65	100	57.14			
Awutu -	39.02	40.48	17.95	21.43	46.34	20.4	25.58	9.3	9.09	7.14	7.5	7.5 7.5	0.34	6.98	9.76	11.9	11.9	9.3	26	15.56	11.36	13.33	20	4.55	40.43	57.14	32.5	17.02	27.66	30 30	43 24.	14 30.43	3 26.0	9 21.43	100	65	42.86			
Dwang-	21.15	15.38	3.85	6	10.2	5.6	5.45	25.45	33.93	25.45	33.33 3	5.29 12	9.09	7.55	6	9.8	6	6	2	34.48	36.36	37.93	36.36	36.36	70.18	59.38	64.58	62.07	65.52	88.42 65	45 64.	15 61.54	64.9	1 100	21.43	52.38	8 65.22			
Krachi -	20	18.18	9.26	5.66	16.36	6.9	6.9	22.41	30.51	18.97	30 2	9.63 7.27	3.57	5.26	5.77	7.27	7.55	7.41	8	42.62	36.67	36.07	26.67	35.59	63.49	64.71	70.59	69.84	78.12	78.26 79	03 7	67.86	8 100	64.91	26.09	50	76			
Tchumbuli -	28.57	26.92	7.69	3.57	12.5	7.4	7.14	29.63	37.04	25.93	30.43 4	1.67 8.33	12.5	7.41	7.41	10.71	11.11	10.71	99	29.63	37.04	28.57	25	35.71	62.96	52.63	62.96	75	82.14	80 74	07 88.	100	67.8	6 61.54	30.43	55.56	68			
Chumburung -	30.19	26.92	9.43	5.88	13.46	7.0	7.14	23.21	26.32	19.64	29.79 2	8.85 9.43	2.12	7.14	8.16	9.26	9.8	9.62	<b>17</b>	43.1	38.6	34.48	28.07	44.64	62.3	51.61	64.58	75	80	35.71 75	41 10	0 88.46	3 75	64.15	24.44	50	75.51			
Nawuri -	27.27	25.45	12.5	7.55	16.98	10.1	8.33	23.73	30	20.34	32 2	9.63 7.27	1.82	5.08	5.77	8.77	7.55	7.41	22	43.55	41.67	33.87	29.51	37.29	68.75	57.58	66	69.84	85.94	36.36	0 75.	1 74.07	79.0	3 65.45	30.43	52.38	8 75.51			
Ginyanga -	42.86	33.33	22.73	9.09	13.64	13.0	13.64	31.82	45.45	27.27	42.86 4	7.62 13.04	5.79	8.7	9.09	18.18	13.64	13.64	84	52.17	47.83	45.45	34.78	43.48	63.64	66.67	68.42	82.61	95.65	100 88	36 85.	71 80	78.2	6 68.42	30	44.44	4 80.95			
Gichode -	27.59	25.86	15.52	7.14	14.29	9.8	8.06	24.19	30.16	20.97	29.63	1.03 6.9	1.33	4.92	5.45	6.78	7.27	7.14	85	44.62	34.92	32.31	28.12	36.07	62.12	57.14	66.04	75.76	100	95.65 85	94 8	82.14	78.1	2 65.52	27.66	45.83	82.35			
Foodo -	27.12	20	12.07	3.57	9.09	3.2	4.84	24.19	31.25	20.97	31.48 3	1.58 10.34	1.11	8.2	9.09	10.17	8.93	8.93	25	43.08	38.46	35.38	28.12	39.68	62.12	54.29	60.38	100	75.78	32.61 69	84 7	i 75	69.8	4 62.07	17.02	41.67	62.75			
Nkonya -	19.15	20.83	8.51	4.17	17.78	8	7.84	29.41	35.29	25.49	34.09	38.3 13.33	3.33	8	8.7	10.2	8.7	8.51	4	39.22	35.29	40.38	38.54	29.41	71.15	62.5	100	60.38	66.04	88.42 6	8 64.	58 62.96	3 70.5	9 64.58	32.5	50	59.52			
Nkami -	38.71	35.48	16.67	10.34	55.17	12.	12.5	23.53	33.33	27.27	35.71 3	9.29 13.79	5.79	12.9	14.29	20	16.67	16.67	8	38.24	25	37.14	33.33	28.12	62.86	100	62.5	54.29	57.14	6.67 57	58 51.	52.63	64.7	1 59.38	57.14	61.11	75.86			
Gonja -	20.69	18.97	8.77	5.45	20	82	9.84	26.23	32.26	24.59	34.62 3	2.14 7.02	3.57	5	5.66	8.62	5.45	5.45	86	39.06	33.33	37.5	38.1	29.51	100	62.86	71.15	62.12	62.12	53.64 68	75 62	3 62.96	63.4	9 70.18	40.43	50	68.63			
Biali -	23.21	17.54	17.86	5.56	7.55	12.0	10	33.9	39.34	35	43.4 4	1.07 18.18	1.21	17.24	18.87	17.54	22.64	21.15	04	69.35	76.19	56.45	54.84	100	29.51	28.12	29.41	39.68	36.07	13.48 37	29 44.	34 35.71	35.5	9 36.36	4.55	14.29	35.42			
Waama -	16.07	15.79	12.28	5.45	13.21	10.1	13.11	33.9	39.34	33.33	39.62 4	2.86 17.86	0.59	15.25	14.81	18.64	18.52	18.52	8	59.68	61.9	62.9	100	54.84	38.1	33.33	38.54	28.12	28.12	34.78 29	51 28.	07 25	26.6	7 36.36	20	22.73	30.61			
Nateni -	20	16.67	11.86	7.27	12.96	11.6	12.5	34.38	40	34.38	43.64	4.07 16.95	9.44	16.13	17.86	15	20	18.52	42	63.64	58.73	100	62.9	56.45	37.5	37.14	40.38	35.38	32.31	45.45 33	87 34.	18 28.57	36.0	7 37.93	13.33	31.82	2 34.69	Jac	a	rd Index
Mbelime -	22.81	18.97	15.79	9.09	11.11	11.8	13.11	36.07	41.27	35.48	44.44	43.1 18.97	5.71	20.34	22.22	22.41	25.93	22.22	64	78.12	100	58.73	61.9	76.19	33.33	25	35.29	38.46	34.92	17.83 41	67 38	6 37.04	36.6	7 36.36	11.38	23.81	35.42		10	)0
Ditammari -	20.69	18.97	20.34	9.09	14.55	15	14.52	31.25	38.46	31.25	43.64 4	0.68 16.95	25	18.03	20	18.97	23.64	20.37	84	100	78.12	63.64	59.68	69.35	39.06	38.24	39.22	43.08	44.62	52.17 43	55 43	1 29.63	42.6	2 34.48	15.58	27.27	44.9		75	i
Kaan -	15.91	17.39	22.22	25	36.59	36.9	35.42	26.09	25.53	28.26	23.81 2	6.67 60	7.65	50	47.83	48.94	44.68	50																					50	)
Mboi_Haanda -	10	11.54	19.61	15.09	27.66	30.1	26.42	35.85	31.48	37.74	34.04	32 68	1.11	66.04	68	61.54	86.79	100	50	20.37	22.22	18.52	18.52	21.15	5.45	16.67	8.51	8.93	7.14	13.64 7.	1 9.6	2 10.71	7.4	1 6	9.3	21.05	5 9.3			-
Mboi_Gulungo -	11.76	13.46	19.23	17.65	29.79	28.	26.42	35.19	32.73	38.89	39.58	36 64.71	1.11	64.15	64.58	57.69	100	88.79	44.68	23.64	25.93	20	18.52	22.64	5.45	16.67	8.7	8.93	7.27	13.64 7.	55 9.	3 11.11	7.5	i 6	11.9	22.22	2 9.3		23	)
Bena_Roba -	12.28	14.29	19.64	24.07	33.33	31.6	27.87	24.56	22.03	32.76	26 2	5.93 66.04	7.14	83.05	87.04	100	57.69	61.54	48.94	18.97	22.41	15	18.64	17.54	8.62	20	10.2	10.17	6.78	18.18 8.	77 9.2	6 10.71	7.2	7 9.8	11.9	21.05	5 8.7			
Bena_Lala_Yang -	15.69	18.18	23.08	28.85	33.33	37.2	33.33	32.69	27.78	37.74	30.61 2	9.41 74.51	2.35	92.59	100	87.04	64.58	68	47.83	20	22.22	17.86	14.81	18.87	5.66	14.29	8.7	9.09	5.45	9.09 5.	77 8.1	6 7.41	5.7	7 6	9.76	17.65	5 7.14			
Bena_Bode -	12.07	14.04	19.3	24.53	26.42	30.5	27.42	26.67	23.33	33.33	25 2	8.07 75.44	3.33	100	92.59	83.05	64.15	66.04	50	18.03	20.34	16.13	15.25	17.24	5	12.9	8	8.2	4.92	8.7 5.	38 7.1	4 7.41	5.20	3 7.55	6.98	19.05	5 6.52			
Bena_voro -	24.24	25.71	33.33	32.35	43.75	<b>9</b> 8.5	48.57	30.56	33.33	38.89	32.35	5.29 94.44		83.33	82.35	//.14	61.11	61.11	67.65	25	25.71	19.44	20.59	21.21	8.57	15.79	13.33	11.11	8.33	12.14 8	2 12	12 12.5	8.5	9.09	10.34	20	11.54			
Bena_rung		04.60	10.07	15.00	10		22.04		00.04	00.05	00.45		6.00	75.44	74.51	00.04	04.71	65	00	10.90	18.97	10.90	17.80	18.18	7.02	13.79	13.33	10.34	0.9	13.04 7.	en ne	3 8.33	1.20	12	7.5	10.79	9 9.3			
Longuda Co	20.3	29.03	16.07	10.09	21.28	22	23.08	88.80	02.88	22.73	500	2 45 22 60	2.29	20.07	29.91	20.93	30	32	20.07	40.00	43.1	44.07	92.00	41.07	34.62	35.71	34.00	31.00	20.63	17.02 29	2 20	20 20 41.07	23.0	3 35.29	7.5	21.05	34.09			
Longuda_Ce	20.31	29.07	13.30	14.00	19.52	200	21.00	95.04	92.91	100	02.73	2.05 27.0	8.90	200	37.74	20	39.90	37.74	28.01	31.05	35.49	34.39	33.02	35	24.60	37.27	25.40	20.07	20.07	77.97 .90	34 10	24 25 02	19.0	7 25.45	7.4	21.00	22.4			
Longuda Guv	29.31	25.86	15.52	14.51	14.81	22.05	22.51	84.38	100	82.81	92.88	0.31 29.31	3.33	23.33	27.78	22.03	32.73	31.48	25.53	38.48	41.27	40	39.34	39.34	32.05	33.33	35.29	31.25	30.16	15.45 3	0 28:	20.50	30.5	1 33.93	9.09	18.18	30.61			
Longuda De	31.58	30.36	14.04	15.09	15.09	22.41	23.33	100	84.38	85.94	88.89 8	8.44 29.82	0.56	26.67	32.69	24.56	35.19	35.85	26.09	31.25	36.07	34.38	33.9	33.9	26.23	23.53	29.41	24.19	24.19	31.82 23	73 23	21 29.63	3 22.4	1 25.45	9.3	19.05	5 25.53			
Ts -	30.51	32.2	59.32	61.82	54.72	86.44	100	23.33	22.95	21.31	23.08 2	2.81 33.93	8.57	27.42	33.33	27.87	26.42	26.42	35.42	14.52	13.11	12.5	13.11	10	9.84	12.5	7.84	4.84	8.06	13.64 8.	33 7.1	4 7.14	6.9	5.45	25.58	26.32	2 10.87			
Cha -	32.14	34.55	58.93	64.81	54.55	100	86.44	22.41	22.03	22.03	22 2	2.22 35.19	8.57	30.51	37.25	31.58	28.3	30.19	36.96	15	11.86	11.67	10.17	12.07	8.2	12.5	8	3.28	9.84	13.04 10	17 7.0	2 7.41	6.9	5.66	20.45	5 19.05	5 10.64			
Bangwir -	39.22	44	34.69	41.67	100	54.55	54.72	15.09	14.81	18.52	21.28	16 32	3.75	26.42	33.33	33.33	29.79	27.66	36.59	14.55	11.11	12.96	13.21	7.55	20	55.17	17.78	9.09	14.29	13.64 16	98 13.	6 12.5	16.3	8 10.2	46.34	57.89	9 27.27			
Tula_Y -	33.33	35.85	62.26	100	41.67	84.81	61.82	15.09	14.55	14.81	14.58 1	5.69 26.53	2.35	24.53	28.85	24.07	17.65	15.09	25	9.09	9.09	7.27	5.45	5.56	5.45	10.34	4.17	3.57	7.14	9.09 7.	55 5.8	8 3.57	5.6	8 6	21.43	31.58	8 9.09			
Tula_Wange_Bau -	35.19	33.96	100	62.26	34.69	58.93	59.32	14.04	15.52	13.79	16.33 1	6.67 22.64	3.33	19.3	23.08	19.64	19.23	19.61	22.22	20.34	15.79	11.86	12.28	17.86	8.77	16.67	8.51	12.07	15.52	22.73 12	.5 9.4	3 7.69	9.20	8 3.85	17.95	5 22.22	2 13.33			
Waja_Sika	89.29	100	33.96	35.85	44	34.55	32.2	30.36	25.86	28.07	29.41 2	4.53 16.67	5.71	14.04	18.18	14.29	13.46	11.54	17.39	18.97	18.97	16.67	15.79	17.54	18.97	35.48	20.83	20	25.86	33.33 25	45 28.	2 26.92	2 18.1	8 15.38	40.48	30	31.82			
Waja_Wi	100	89.29	35.19	33.33	39.22	32.14	30.51	31.58	29.31	29.31	34.69	28.3 15.09	4.24	12.07	15.69	12.28	11.76	10	15.91	20.69	22.81	20	16.07	23.21	20.69	38.71	19.15	27.12	27.59	12.86 27	27 30.	19 28.57	20	21.15	39.02	35	38.17			
14 <sup>80</sup>	Mala Mala	198	2112	Baug A	anitro Ot	1-01 <sup>0</sup>	Longi Longi	Da. C.	Jula Lon	gute gute	GN20	d Ben	Jon Pana	-3ª P	are ho	2000 M	1 He	and	Oltar	mai	alme	A GIN	ana	Bid	iona a	A ANT ANT	0%0 0%0	900000	ory on the	Chill Manu	A DUNIN	lionu,	- Teday	Junar An	AUTU	GIR	ala			

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### Relation Agreement SG

- Tula-Waja forms a cluster with Longuda, but also with Bena-Mboi
- → Adamawa ("Trans-Benue")
- Oti-Volta East and Guang do not cluster with any of the Adamawa groups



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### Relation Agreement PL

- Each language group shows clear clustering
- Longuda, Guang and Oti-Volta East seem to be closer to each other
- Very low similarity values between Bena-Mboi and Guang



# 3 DISCUSSION

## (I) Trans-Benue hypothesis

#### **Bennett (1983)**

"Bennett (1983) combines Longuda and Tula-Waja as 'Tula-Longuda' and assumes that 'Tula-Longuda' constitute a unit with Bəna-Mboi (= Yungur) and Bikwin-Jen which he labels 'Trans-Benue'." (Kleinewillinghöfer 2014)

"No one […] presented any convincing evidence [for Benett's Trans-Benue hypothesis] showing that […]: Bikwin-Jen, Tula-Waja, Longuda, and Bəna-Mboi form indeed a valid genetic unit as against other Adamawa groups like Ba (= Kwa), Yandang, Mumuye, Samba-Duru and/or Central Gur language groups." (Kleinewillinghöfer 2014)

# (I) Trans-Benue hypothesis

#### (Ia) Tula-Longuda hypothesis

- Confirmed
- Closer relation for Tula-Waja and Longuda shown for lexical comparison, singular noun form and singular agreement class, but not for plural noun form and agreement

#### (Ib) Trans-Benue hypothesis

- Not confirmed
- No cluster between Tula-Waja, Longuda and Bena-Mboi for lexical comparison
- Tula-Waja, Longuda and Bena-Mboi show patterns for singular nominal form and singular agreement class as against Oti-Volta East and Guang, but not for plural nominal form and agreement form
- Bikwin-Jen not included no statement possible

# (II) Gur-Adamawa hypothesis

- Not confirmed
- Tula-Waja, Longuda and Bena-Mboi show patterns for singular nominal form and singular agreement class as against Oti-Volta East
- 'light' clustering of Oti Volta East with Adamawa for noun form singular
- Longuda shows similarities with Oti-Volta East for plural agreement forms, but not the other language groups

# **Differences between singular and plural clustering**

- Many patterns of clustering might be explained by class inventory of agreement and nominal forms (see Figure 2: Deriflection systems))
- Singular noun form classes seem to be more conservative than plural classes, as they show more coherence
- Especially for plural, nominal forms differ between the language groups
   Singular nominal forms more suitable for comparison

### **Plural patterns in deriflection**



## Nominal form class vs. agreement class

- NF comparison: not very high values
- AGR comparison: stronger coherence
- → cf. findings in other Niger-Congo groups where NF marking is more conservative than agreement marking
- $\rightarrow$  assumed levelling in AGR, especially in Tula-Waja



## Discussion

- Results do not necessarily indicate historical developments
- "Noun classes" can be petrified or eroded
- If not identifiable, there is no point for comparison
- If former NF is identifiable, it is sometimes unclear which proto stage one should refer to (See example)
  - Waja: twi.ya-u (-a = petrified suffix)
  - a < \*ka
  - Proto-Waja? Proto-Tula-Waja? Proto-Adamawa? Proto-Niger-Congo?

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