A new type of concurrent nominal classification in Niger-Congo?

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1 Introduction: noun classification, gender, concurrency

+ formally different systems of noun classification: gender, different types of classifiers, differential marking of other grammatical features (number, possession etc.), WH-pronoun distinction, and yet other noun-classifying linguistic reflexes

+ gender = classification of nouns reflected by agreement on other words (Corbett 1991)

> our analysis: Güldemann (2000), Güldemann and Fiedler (forthcoming) - see Appendix 1

+ "No-concurrent-feature conjecture": one feature encoded in one morpho-syntactic system:

… a language may have, or not have, each of the possible features, but it may not have two instances of the same feature. (Round and Corbett 2017: 57)

+ recent research, notably Fedden and Corbett (2017), identifies several cases where noun classification is conveyed by two "concurrent" systems in the specific sense of being functionally parallel but overall (largely) independent: classifiers + genders (e.g., Nanti, Pnar, Mian), two distinct gender systems (e.g., Paumarí, Michif)

> criteria for identifying two separate systems:

(i)   the degree to which the semantics of the two systems are orthogonal to each other, …

(ii) the degree to which their means of realization are different. (Corbett, F. and F. 2017: 215)

> for example, Michif (mixed language of Cree and French):

- Cree-based agreement on demonstratives and verbs: A(nimate) vs. I(n)A(nimate)
- French-based agreement on definite article and preposed adjectives: M vs. F

- two systems differ in both their semantics and their formal exponents of agreement

(1)   Michif (Bakker 1997: 109, cited in Corbett 2006: 269-270)

a. *awa*   *lı*   *garsū*   'this boy'
    this.near.A.SG   DEF.M.SG   boy

b. *awa*   *la*   *fij*   'this girl'
    this.near.A.SG   DEF.F.SG   girl

c. *u:ma*   *lı*   *papji*   'this paper'
    this.near.IA.SG   DEF.M.SG   paper

d. *anıma*   *la*   *mæ̃zū*   'that house'
    this.Intermediate.IA.SG DEF.F.SG   house

2 Noun classification in Niger-Congo

+ nominal classification reflected by both agreement (> gender) and inflectional affixing noun deriflections in a very parallel fashion due to largely biunique and alliterative mapping between agreement and noun form classes (epitomized in philological "noun class" concept)

(2)   Swahili (personal knowledge)

a. *m-toto*   *yu-le*   *m-moja*   *a-me-anguka*
    M(W)-child(**1**)   **1**-D.DEM   **1**-one   **1**-PERF-fall
    that one child has fallen down

b. *wa-toto*   *wa-le*   *wa-wili*   *wa-me-anguka*
    W(A)-child(**2**)   **2**-D.DEM   **2**-two   **2**-PERF-fall
    those two children have fallen down

+ historically old, inherited situation commonly reconstructed for various proto-language states, notably Proto-Bantu > Figure 1 + 2 (after Meeussen 1967: 96-104)

AGR		NF
X		Ø
*1(a)	u-,a-	*mu-
*3	gu-	X
*18	mu-	X
*2	ba-	*ba-
*4	gi-	*mi-
*15/17	ku-	*ku-
*5	di-	*i̧-
*6(A)	ga-	*ma-
*14	bu-	*bu-
*7	ki-	*ki-
*8	bi̧-	*bi̧-
*9	ji-	*n-
*10	ji̧-	X
*11	du-	*du-
*12	ka-	*ka-
*13	tu-	*tu-
*19	pi̧-	*pi̧-
*16	pa-	*pa-
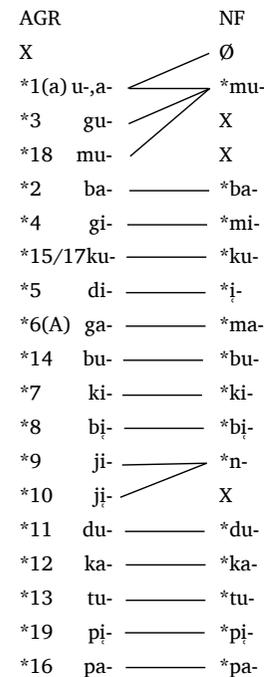
Note: X = no independent counterpart

Figure 1: Mapping of 18 agreement and 16 noun form classes in Proto-Bantu

```
AGR   SG    TN    PL          SG    TN    PL
X                             Ø
*1(a) u-,a-                   *mu-  *mu-
*2          ba-                     *ba-
*3    gu-                     X
*4          gi-                     *mi-
*15/17 ku-  ku-              *ku-   *ku-
*5    di-                    *di-
*6    ga-   ga-              *ga-   *ga-
*14   bu-   bu-              *bu-   *bu-
*7    ki-                    *ki-
*8          bi̧-                    *bi̧-
*9    ji-                    X
*10         ji̧-             *n-     *n-
*11   du-                   *du-
*12   ka-                   *ka-
*13         tu-                    *tu-
*19   pi̧-                  *pi̧-
*16   pa-                    *pa-
*18   mu-                   X
```
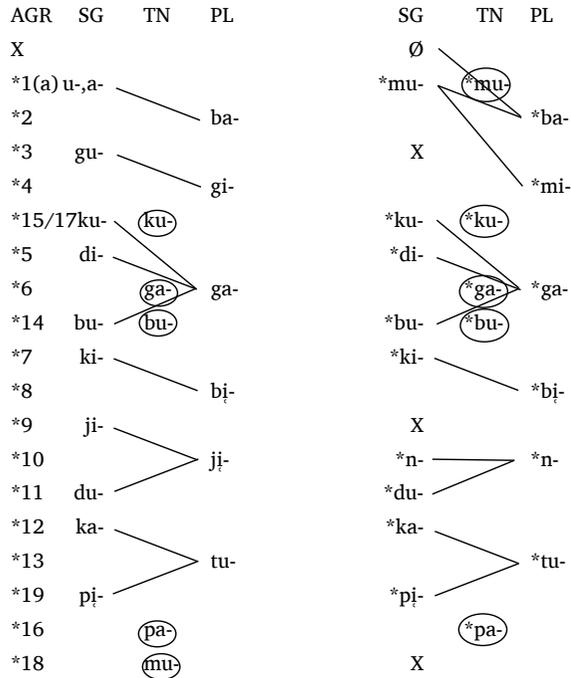
Note: X = no independent counterpart

Figure 2: Gender system (left) vs. deriflection system (right) of Proto-Bantu

+ agreement-based system of 10 + 3 genders and morphologically based system of 11 + 5 deriflections correspond largely in terms of semantic and structural distinctions
> single unitary system of nominal classification

3 Concurrent classification in Niger-Congo

+ many Niger-Congo languages have restructured the above type of inherited system to a considerable extent (sometimes up to its entire loss)
> one specific endpoint of recurrent language change is the heavy reduction of the gender system to a simple binary opposition under a far stronger retention of the complex deriflection patterns that also maintain semantic classification criteria > to be exemplified by Gonja (Guang, Potou-Akanic, BENUE-KWA)

3.1 The case of Gonja

3.1.1 Agreement classes

+ four agreement classes distinguishing SG vs. PL and A(nimate) vs. I(n)A(nimate)

AGR	Number	SBJ PRO	OBJ PRO	DEM	CARD. NUM	ORD. NUM	IDEF (one)	'any'	who/ what
1	SG	e-	e-mo	é-dè	-	é-	è-kó	è-kámà	è-mò
2	PL	bo-	bo-mo	bú-dè	bù-	bá-	bù-kó		bù-mò
3	SG	ki-	ku-mu	kí-dè		kí-	kù-kó	kì-kámà	mò
4	PL	a-	a-mu	á-dè	à-	á-	à-kó		à-mò

Table 2: Agreement classes of Gonja (after Painter 1970, Rytz 1970)

(3)   Gonja (Painter 1970: 371-2)

a. *kà-nyέn   érì   nyòr   àcɔ́   è-mɔ̌   nà*
   KA-man   this   be.thin   surpass   **1-PRO**   DEF
   This man is thinner than that one.

b. *ŋ́   kɔ́   à-dàmàtá   àcɔ́   bò-mò   kíkὲ*
   1SG   have   A-many   surpass   **2-PRO**   all
   I have more (sheep) than all of them.

c. *kà-dí-bì   érì   dú   pùlὲ-púlέ   àcɔ́   kú-mú   nà*
   KA-tree   this   be   tall   surpass   **3-PRO**   DEF
   This tree is smoother than that one.

d. *dòróbì   érì   dú   nyáŋ-nyáŋ   àcɔ́   á-mú   kíkὲ*
   lemon   this   be   RED-sour   surpass   **4-PRO**   all
   This lemon is sourer than those.

3.1.2 Gender system

+ "parallel" gender system of two genders for animates and inanimates

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            SG              PL
1           e- ——— Animate
2                          bo-
3           ki- ——— Inanimate
4                          a-
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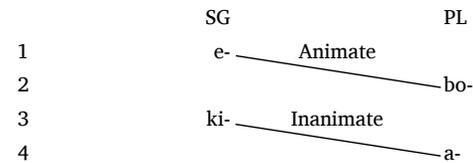
Note: exponents represented by subject pronouns

Figure 3: Gender system of Gonja (after Painter 1970)

3.1.3 Noun form classes

- 6 noun form classes marked by nominal prefixes and 1 Ø-marked class, only one of which
is dedicated to a single number feature (transnumeral nouns!)
- 2 additional noun form classes by combining 2 prefixes with plural suffix *-ana*
> see Appendix 2, Table A2

3.1.4 Declension~deriflection system

+ number mapping of NF classes establishes 6 paired and 3 non-paired deriflections (KU-,
KA- are singularia and N- plurale tantum) forming a complex "crossed" deriflection system
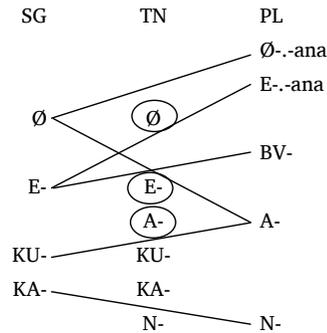
Note: inventory disregards exceptional "inquorate" patterns

Figure 4: Deriflection system of Gonja (after Painter 1970)

> several deriflections have clear semantic cores, also evident by regular assignment of
derivations (4) and integrated loans with deriflection Ø-/A- but variable agreement (5)

(4) KA-/N-:   group membership   *kà-málbà / m̀-málbà*   'Hausa person'
     E-/BV-:   nomina agentis   *é-dɔ́-pò / bú-dɔ́-pò*   'farmer' < *dɔ* 'to farm'
     KU-:   verbal noun   *kú-dɔ́*   'farming' < *dɔ* 'to farm'

(5) Ø-/A-:   animate gender   *Ø-tícà / á-tícà*   'teacher'
     Ø-/A-:   inanimate gender   *Ø-tébùl / à-tébùl*   'table'

- special type of nominal classification as previously anticipated:

> Nonagreeing classification. In many languages there are distinct declension classes of nouns, or
> other formal classes of nouns, which can sometimes be associated with semantic categories like
> those involved in gender and other kinds of classification but which never involve agreement,
> selection, or other formal response. (Nichols 1992: 134)

3.1.5 Concurrency

+ various concurrency measures in Fedden and Corbett's canonical typology approach
> some not applicable here due to different loci of classification > our 3 measures:
a) similarity of formal encoding: agreement vs. noun form classes
b) structural orthogonality: mutual predictability of genders and deriflections
c) semantic basis of classification: genders vs. deriflections

3.1.5.1 Formal similarity between agreement and noun form classes

+ considerable degree of formal diversity between the two systems:
a) all 4 AGR have formal counterparts in the NF system but the latter has five more forms
b) 4 corresponding forms are semantically not identical (cf. Fedden and Corbett 2017: 13)
> similarity measure as the ratio between shared and all forms: 4 : 9 = 0.44
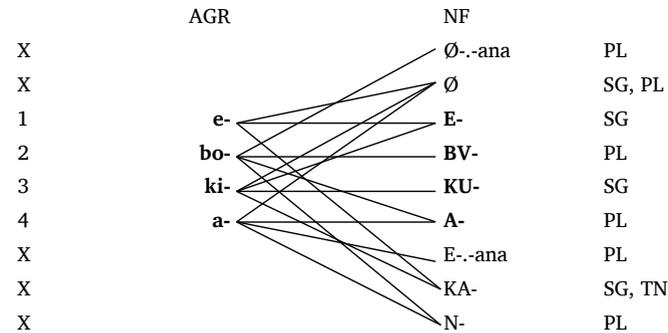
Note: only count nouns with number variation, agreement for transnumeral nouns unclear

Figure 6: Mapping of agreement and noun form classes in Gonja

3.1.5.2 Orthogonality score between genders and deriflections

> Two features are fully orthogonal if each value of one feature co-occurs with each value of the
> other; … (Corbett, Fedden and Finkel 2017: 227; Fedden and Corbett 2017: 31)

+ 2 genders and 9 deriflections = 18 combinations: only 12 attested (see also Appendix 3)

	E-/BV-	Ø/Ø-.-ana	KU-/A-	KA-/N-	Ø/A-	E-/E-.-ana	E-	Ø	A-
A	x	x	x	x	x				
IA			x	x	x	x	x	x	x

Table 3: 12 gender-deriflection combinations in Gonja

- orthogonality score according to Fedden and Corbett (2017), namely 0.3 vis-à-vis
maximum of 1, also reflects a relatively low orthogonality between the systems

3.1.5.3 Semantic classification basis

+ simple gender distinction of animate vs. inanimate

+ deriflection semantics: human, kin, group membership, diminutive, body part, non-countable, aggregate, abstract, deverbal derivation, infinitives (cf. also Appendix 3)

> different semantic assignment principles of the two systems with only limited overlap regarding animacy as major argument for concurrency

3.2 Concurrency across Niger-Congo

+ similar concurrent systems have developed several times independently across genealogically and geographically dispersed Niger-Congo languages (cf. Table 4)

> first preliminary analyses of an arbitrary selection of four languages (cf. Table 5):

Example language	Niger-Congo subgroup	Country
Koromfe	Central Gur	Burkina Faso
Samu	Samuic	Burkina Faso
Win	Tusian	Burkina Faso
Akan	Tano, Potou-Tano	Ghana
Gonja	Guang, Potou-Tano	Ghana
Animere	Ka-Togo, Ghana-Togo-Mountain	Ghana
Gade	Nupoid	Nigeria
Medumba	Grassfields, Non-Bantu, Bantoid	Cameroon
Nzadi	Zone B, Bantu, Bantoid	DR Congo
Beke	Zone D, Bantu, Bantoid	DR Congo

Note: **bold** = finalized deeper analysis

Table 4: (Candidate) cases of concurrent noun classification in Niger-Congo

Language	Semantic classification basis	Formal similarity ratio	Structural orthogonality score
Gonja	distinct	0.44	0.33
Animere	distinct	0.16	0.37
Koromfe	(distinct)	0.29	0.21
Medumba	?	0.00	0.27

Note: Score range between 0 and 1; low similarity but high orthogonality = high difference

Table 5: Concurrency criteria for four Niger-Congo languages

+ 3 criteria with different strength of evidence for concurrency, apparent overall hierarchy:

     semantics > formal similarity > structural orthogonality

4 Discussion

+ concurrent classification systems arise by means of two opposite scenarios:

a) two different systems emerge in different morpho-syntactic contexts: accounts for most cases of concurrent systems identified so far (see §1 above)

b) one originally unitary system diversifies in different morpho-syntactic domains: principal scenario in Niger-Congo, contingent on the design of its inherited classification system with originally strong parallels between syntactic agreement and morphological deriflection

> The drift in Niger-Congo has been in the direction of the simplification of nominal classificational systems. (Greenberg 1949/1955: 13)

> I hold that both the marking of nouns and the concord (agreement) systems in their formal and semantic multiplicity should be considered as independent paradigms with regard to their evolution. (Miehe forthcoming: 53)

Type	Heavy attrition of		Cases attested in:
	Genders	Deriflections	
I	NO	NO	Bantu, Atlantic, Mel, etc.
II	NO	YES	Plateau, Cross-River, Kru
III	**YES**	**NO**	**Bantu, Guang, Ghana-Togo-Mountain, Gur**
IV	YES	YES	Gbe, Igboid, etc.

Note: II and III characterized by innovative non-congruence of gender and deriflection

Table 6: Idealized types of Niger-Congo noun classification vis-à-vis inherited system

+ type III at issue develops through the loss of the original alliterative agreement system

- accompanied by a drift away from a largely morphological, **lexeme**-based assignment system toward a strictly semantic, **referent**-based assignment system

- according to available data, shift appears to start indeed in contexts of long-distance anaphoric agreement (in line with Corbett's (2006) agreement hierarchy)

+ at least two languages analyzed so far display the innovation of a basic animacy-based gender opposition that is cross-linguistically as salient as a ∓human opposition (cf., e.g., Heine 1982, Croft 1994, Dahl 2000, Kilarski 2013, Corbett 2013)

- supports the central concept of a restricted set of so-called "macro-genders":

> Probably a human or animate macrogender is operant to some extent in all class systems, although not all grammatical descriptions allow this fact to be established. (Nichols 1992: 129)

- macro-genders can be aligned as cut-off points along the nominal hierarchy (cf. Comrie 1989, Aissen 2003, cf. gradient 'conceptual animacy' by De Swart and De Hoop 2018: 16):

     +**feminine or** +**masculine** > +**human** > +**animate** > **inanimate**

+ in more complex systems: gender distinction(s) beyond the relevant macro-gender (e.g., size, shape, aggregation, plant, fruit, material, etc.) relevant by default for the "unmarked" macro-gender value that is lower on (= toward the right of) the above hierarchy

+ in Niger-Congo: new **animacy**-based macro-gender can be argued to be categorically distinct from **human**-based macro-gender as ingrained in the inherited classification and still reflected in deriflection system
> semantic distinction occurring in two different morphosyntactic domains as strongest evidence for a new type of concurrent system of nominal classification

Abbreviations

A Animate, AGR Agreement class, D Distal, DEF Definite, DEM Demonstrative, F Feminine, IA Inanimate, IDEF Indefinite, M Masculine, NF Noun form class, NUM Numeral, OBJ Object, PERF Perfect, PL Plural, PRO Pronoun, RED Reduplication, SBJ Subject, SG Singular, TN Transnumeral

Appendix 1

a) AGREEMENT CLASS (= AGR): class of concrete noun forms with identical agreement behavior across all relevant targets
b) GENDER: class of nominal lexemes (or referents) reflecting the agreement-based classification of nouns
c) NOUN FORM CLASS (= NF): class of concrete noun forms with identical formal, i.e. morpho(phono)logial properties
d) DERIFLECTION (> DERIvation + inFLECTION): class of nominal (or other) lexical bases established on account of identical morpho(phono)logical paradigmatic variation

Relates to:	Concrete noun in a morpho-syntactic context = word form	Abstract noun in the lexicon = lexeme
Syntax	a. AGREEMENT CLASS (abbreviated as AGR and numbered by Arabic numbers)	b. GENDER (numbered by Roman numerals)
Morpho(pho-no)logy	c. NOUN FORM CLASS (abbreviated as NF)	d. DERIFLECTION aka "declension class"

Table A1: The four concepts used for analyzing gender systems

Appendix 2

NF	NUM	Form(s)	Example(s)
Ø	SG TN	Ø	*fĕté* 'monkey', *kòtòkú* 'sack', *jìny-jìng* 'wasp' *cúrò* 'brother-in-law' *tùtò* 'father', *tánà* 'aunt (father's sister)' *dà* 'character'
E-	SG TN	e-	*è-cé* 'woman', *é-bí* 'child', *é-wúrà* 'chief', *è-mà* 'mother', *è-yú* 'thief', *é-fɔ́* 'stranger' *è-léng* 'strength', *è-yúr* 'skin, body', *é-fɔ́l* 'rope' *è-bú* 'room', *è-dé* 'fire', *è-bálàng* 'meat', *é-póng* 'belly'
BV-	PL	ba-/ bi-/bu-	*bà-cé* 'women', *bí-bí* 'children', *bá-wúrà* 'chiefs', *bà-mà* 'mothers', *bù-yú* 'thiefs', *bú-fɔ́* 'strangers' *bà-nìkpá* 'friends', *bà-cúrò* 'brother-in-law'
KU-	SG TN	ki-/kɪ-/ku-/kʊ-	*kì-wá* 'snake', *kì-còng-bò* 'stone', *kù-shúng* 'work', *kì-máng* 'hole', *kì-màshírí-bì* 'money', *kí-jí-bì* 'food', *kí-bém-bì* 'thigh' *kì-nìkpá* 'friend' *kì-nyì* 'boasting', *kì-kpáng* 'hunting', *kì-sèlí* 'in-law's funeral'
A-	PL TN	a-	*à-wá* 'snakes', *à-còng-bò* 'stones', *à-shúng* 'works', *à-máng* 'holes', *à-màshírí-bì* 'moneys', *á-jí-bì* 'foods', *á-bém-bì* 'thighs' *à-fĕté* 'monkeys', *à-kòtòkú* 'sack', *à-jìny-jìng* 'wasps', *à-tó* 'fathers' *á-kóng* 'hunger', *á-kpátàsì* 'spirit'
kA-	SG TN	ka-/ko-	*kó-dɔ́* 'farm', *kà-sàwúlè* 'ground', *kà-dí-bì* 'tree', *kà-bówé* 'goat', *kà-sángè* 'knife' *kà-sà* 'loving', *kà-shing* 'time'
N	PL TN	n-/m-/ɲ-/ŋ-	*ǹ-dɔ́* 'farms', *ǹ-sàwúlè* 'grounds', *ǹ-dí-bì* 'trees', *m̀-bówé* 'goats', *ǹ-sángè* 'knives' *ny-cú* 'water', *ḿ-fɔ́l* 'salt'
E-.-ana	PL	e-.-ana	*è-léng-ánà* 'strength', *è-yúr-ánà* 'skin, bodies', *é-fɔ́l-ánà* 'ropes'
Ø-.-ana	PL	Ø-.-ana	*Ø-tùtò-ánà* 'fathers', *Ø-tánà-ánà* 'aunts (father's sisters)'

Table A2: Noun form classes of Gonja (after Painter 1970, Rytz 1970)

Appendix 3

- the two systems would be fully orthogonal if all 18 combinations are attested

- the two systems would overlap the more they approach 9 combinations, because a gender category would then increasingly predict a deriflection category and vice-versa

Semantics	Gender		Deriflection	Semantic cores
			Ø/Ø-.-ana	kin terms
animate	I		Ø/A-	loans
			E-/BV-	humans
			KU-/A-	body parts, inanimates
			KA-/N-	membership, diminutives
inanimate	II		E-/E-.-ana	artefacts
			Ø	loans
			E-	environment
			A-	environment
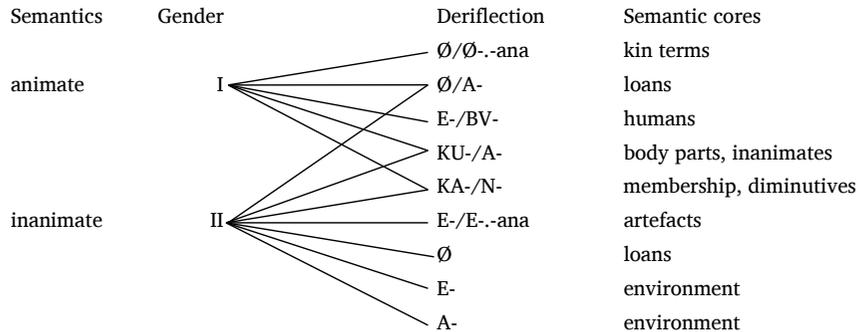
Figure A1: Mapping of gender and deriflections in Gonja

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