

PHONETICS PUSHING SYNTAX: S/AUX FUSION AND THE RISE OF SUBJECT CROSS-REFERENCE IN MANDE

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Abstract: This paper investigates how the fusion between subject person markers and auxiliaries is related to the rise of subject cross-reference, based on a sample of 28 Mande languages (Niger-Congo, West Africa). Building my microtypology on two independent parameters, i.e. S/Aux fusion and subject cross-reference, I demonstrate that the distribution of language types reveals an implicational relationship between the two parameters in Mande: no S/Aux fusion implies no subject cross-reference, and subject cross-reference implies S/Aux fusion. This distribution suggests that S/Aux fusion may trigger the rise of subject cross-reference. To account for this, I argue that in constructions with strong S/Aux fusion and no subject cross-reference, non-fused predicative markers are replaced by fused person-predicative markers within the same syntactic slot, i.e. Aux. This process is driven by low textual frequency of non-fused predicative markers and strong phonetic erosion of predicative markers within person-predicative forms.

Key words: Mande, fusion, agreement, grammaticalization, usage-based grammar, microtypology

1. Introduction

Unlike most other Niger-Congo branches, Mande languages have a rigid SAuxOV structure. S may be encoded by a full noun phrase or a subject person marker. Aux stands for auxiliary markers encoding tense, aspect, modality, and polarity (TAMP). They are commonly labeled “predicative markers” in literature on Mande; I follow this tradition here. This paper studies the morphosyntactic properties of subject person markers and predicative markers in a sample of 28 Mande languages.

Despite the general similarity in basic SAuxOV structural template, Mande languages, and particular TAMP constructions in these languages, vary with respect to the synchronic properties of their subject person markers and predicative markers. I focus on two parameters of variation here: the FUSION between subject person markers and predicative markers, henceforth S/Aux fusion (§1.1), and SUBJECT CROSS-REFERENCE (§1.2).

1.1. S/Aux fusion

The first parameter is whether subject person markers are fused with predicative markers. For example, in Mandinka (< Manding), subject person markers and predicative markers appear as a sequence of clitics, and there is no subject indexation on Aux. Subject person markers, e.g. *à* in (1), are proclitics, and monosyllabic predicative markers, e.g. *yé* in (1–2), are enclitics, since their tone is affected by the tone of the preceding element (Creissels & Sambou 2013: 54).

- (1) Mandinka (< Manding) (Creissels & Sambou 2013: 58)

À **yé** *jàt-óò* *bàrààmà.*
 3SG PFV lion-DEF injure

‘He injured the lion.’

- (2) Mandinka (< Manding) (Creissels & Sambou 2013: 58)

Dánn-óò **yè** *jàt-óò* *bàrààmà.*
 hunter-DEF PFV lion-DEF injure

‘The hunter injured the lion.’

In Mandinka, subject clitics occupy the S slot, and predicative markers fill the Aux slot. The two sets of markers are morphologically independent from each other.

Yet in other languages, subject person markers and predicative markers are fused into more or less non-segmentable portmanteau complexes (Siewierska 2003: 129–130; Vydrin 2006: 333) resulting in subject being indexed on Aux. Such markers are quite common in languages of the Macro-Sudan area; various labels are used in literature, e.g. person-

auxiliary markers or tensed pronouns (Anderson 2011), tense-person complexes (Creissels 2005). In this paper, I use the term “person-predicative marker”.

For example, in Guro (< Southern), person-predicative markers appear as a result of fusion between person markers and the following predicative markers or copulas: irrealis marker *é*, a homophonous imperfective marker *é*, existential copula *à* and negative copula *ká* (3–4), cf. Kuznetsova & Kuznetsova (2017: 832) for the full paradigm of Guro subject markers.

- (3) Guro (< Southern) (O. Kuznetsova 2013: 140)

Yàà (~*è* *ká*) *wí* *lē* *lō*.
 3SG.NEG 3SG NEG sound SUP NEG
 ‘He did not respond.’

- (4) Guro (< Southern) (O. Kuznetsova 2013: 119)

È *lē* **wó** (**wò* *é*) *wó* *wūō* *wī* *bīē*.
 3SG QUOT 3PL.OPT (3PL OPT) 3PL.REFL head hair raise
 ‘He said they should comb their hair.’

In Guro, person-predicative markers encode anaphoric subjects as shown in (3–4). With lexical subjects, non-fused, or bare, predicative markers are used, such as the negative copula *ká* in (5) and the irrealis marker *é* in (6).

- (5) Guro (< Southern) (O. Kuznetsova 2013: 105)

Bālī *ká* *à* *yí* *sí* *lē* *lō*.
 God NEG 3SG.NSBJ consent go_away.PFV SUP NEG
 ‘God didn’t let this happen.’

- (6) Guro (< Southern) (O. Kuznetsova 2013: 117)

Tālá *é* *sí* *zālà* *bìlì-lì* *zūō*
 Tala IRR go_away tobacco drink-GER behind
láv **láv!**
 immediately immediately
 ‘Tala should stop smoking immediately!’

1.2. Subject cross-reference on Aux

The second parameter of variation relates to whether 3rd person subject markers co-occur with lexical subjects (Siewierska 2004; Creissels 2005; Kibrik 2011).

In some Mande languages, 3rd person subject markers are always used as independent referential devices; such markers are labeled “anaphoric” (Siewierska 1999), or “alternating pronouns” (Kibrik 2011), or “pro-indexes” (Haspelmath 2013). In other words, no subject marker appears after lexical subject.

Despite the formal difference between person markers in Mandinka and Guro outlined in 1.1, in both languages subject person markers do not co-occur with lexical subjects, cf. (2) from Mandinka and (5–6) from Guro.

In some other Mande languages, 3rd person subject markers are used in anaphoric contexts as well as after lexical subjects; they are labeled “ambiguous” (Siewierska 1999), “tenacious pronouns” (Kibrik 2011), or “cross-indexes” (Haspelmath 2013).

For example, in Guinean Kpelle, person markers are fused with predicative markers just like in Guro (Konoshenko 2017: 329). However, person-predicative forms are used in Guinean Kpelle even when there is a full noun phrase in subject position. There is no other way to construct a basic predication with lexical subject in this language.

- (7) Guinean Kpelle (< Southwestern) (own field data)

Ǻ Hehee kàa.
 3SG.HAB Hehee see\L
 ‘He often sees Hehee.’

- (8) Guinean Kpelle (< Southwestern) (own field data)

Pépèe Ǻ Hehee kàa.
 Pepee 3SG.HAB Hehee see\L
 ‘Pepee often sees Hehee.’

It can be demonstrated that structures like (8) with lexical noun phrase and a person-predicative marker are basic predications, rather

than dislocated topic constructions as in the sentence *Peter, he likes beer*. For example, in Guinean Kpelle person-predicative markers must follow lexical noun phrases even in embedded clauses (9–10), which is not expected for dislocated topic constructions (Lambrecht 2001).

- (9) Guinean Kpelle (< Southwestern) (own field data)

Yílê_i áa_i j_inìŋ.
 dog 3SG.RES 3SG\bite
 ‘A dog bit him.’

- (10) Guinean Kpelle (< Southwestern) (own field data)

[Nú-i_j] [yílê_i áá_i j_inìŋ] [kú gàa].
 DEF\person-REL dog 3SG.RES 3SG\bite 1PL.EXCL 3SG\see\L
 ‘We saw the man whom a dog bit.’

Hence, lexical noun phrase occupies the subject position and person-predicative markers cross-reference the subject in Guinean Kpelle, so this language belongs to the “pro-drop” type (Vydrin 2010).

Finally, it is worth mentioning that in all Mande languages, 1st and 2nd person subject markers are used as independent referential devices, regardless of whether they are structurally transparent as in (11) from Mandinka or fused with Aux as in (12) from Guro.

- (11) Mandinka (< Manding) (Creissels & Sambou 2013: 72)

ŋ ŋá kód-óó sòtò.
 1SG PFV money-DEF earn
 ‘I have earned money.’

- (12) Guro (< Southern) (O. Kuznetsova 2013: 114)

Á létélè dō jā.
 1SG.IPFV letter INDEF hit.IPFV
 ‘I am going to write a letter.’

In this paper, I investigate how the process of phonetic fusion between person and predicative markers is related to the rise of subject cross-reference in Mande. According to the standard theory of grammaticalization, syntactic / semantic shift is the primary source of cross-

reference, which may be later accompanied by formal erosion of person markers (Givón 1976; Lehmann 2002 (1982); Siewierska 1999). Mande data suggest that it is rather the process of phonetic fusion that triggers syntactic change.

The paper is organized as follows. Section 2 provides general information on Mande and languages of the sample. In Section 3, crucial evidence is presented suggesting that fusion triggers subject cross-reference in Mande. Section 4 presents a diachronic account of how cross-reference constructions appears in Mande, with some further evidence supporting this model. Section 5 summarizes the findings.

2. Mande languages: the sample

The Mande language family comprises about 60 languages spoken in of West Africa, with vague boundaries between languages and dialects. Their internal classification has been rather well-established for low-level groups, but there is less agreement on mid-level grouping (Kastenholz 1997 vs. Vydrin 2009) although this controversy is not particularly relevant for the present discussion.

In this paper, I follow the internal classification of Mande languages as suggested in Vydrin (2009), represented in Figure 1. The sample of 28 languages studied in this paper aims at covering various Mande branches by taking languages with available descriptions. Some languages from better described branches, Southern Mande in particular, were not included into the sample to keep it more balanced. Table 1 shows the languages included into the sample, with their primary sources.

Table 1

Mande languages

Language	Low-level group	Reference
Soninke	Soninke-Bozo	Creissels & Diagne 2013; Diagana 1995
Seenku	Samogo	Prost 1971

End of table 1

Language	Low-level group	Reference
Dzuun	Samogo	Solomiac 2007
Bobo	Bobo	Prost & Lebris 1981
Ligbi	Jogo	Persson & Persson 1980
Bamana	Manding	Dumestre 2003; Vydrin 2008a; 2017a
Western Maninka	Manding	Creissels 2013
Mandinka	Manding	Creissels & Sambou 2013
Kakabe	Mokole	Vydrina 2017
Koranko	Mokole	Kastenholz 1987
Vai	Vai-Kono	Welmers 1976
Soso	Soso-Jalonke	Touré 1994; 2004
Loko	Southwestern	Kimball 1983; Innes 1964
Mende	Southwestern	Innes 1971
Bandi	Southwestern	Grossmann 1992; Anonyme ms.; Heydorn 1940/41; Rodewald 1985
Guinean Looma	Southwestern	Mishchenko 2017
Guinean Kpelle	Southwestern	Konoshenko 2017
Dan-Gwæetaa	Southern	Vydrin 2017b
Guro	Southern	N. Kuznetsova 2007; O. Kuznetsova 2013 Kuznetsova & Kuznetsova 2017
Yauré	Southern	Hopkins 1982; Vydrin 2012
Gban	Southern	Fedotov 2017
Ben	Southern	Paperno 2014
Wan	Southern	Nikitina 2008; Vydrin 2012
San	Eastern	Paré 1998
Bisa	Eastern	Prost 1950
Boko	Eastern	Prost 1976; Jones 2004a
Bokobaru	Eastern	Jones 2004b
Kyanga	Eastern	Jones 2013

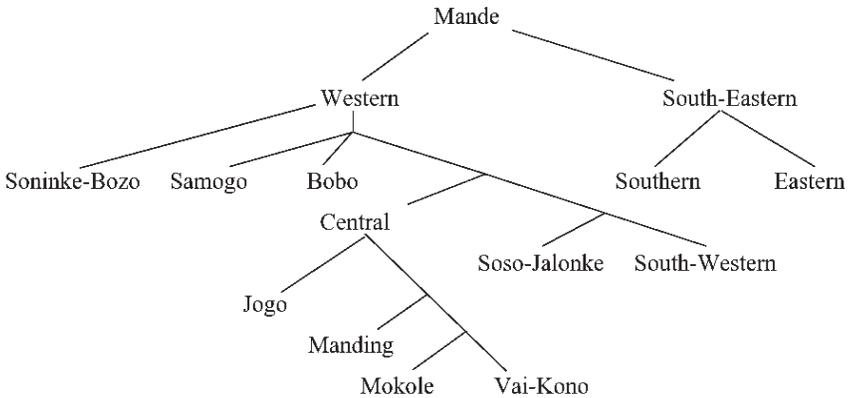


Figure 1. The classification of Mande after Vydrin (2009)

3. S/Aux fusion and subject cross-reference in Mande: a causal relationship

In Section 1, I outlined the two independent grammatical parameters in Mande that are of interest in this paper, i.e. (a) the fusion between subject person markers with Aux resulting in subject indexation on Aux, and (b) subject cross-reference on Aux. Crosstabulation of these parameters yields four theoretically possible structural types of TAMP constructions in Mande, cf. Table 2. Crucially, only three of them are attested.

Table 2 should be treated with caution. Some languages, e.g. Mandinka, Guro and Guinean Kpelle discussed in Section 1, are consistent in the pattern they choose. However, in some other languages, e.g. Boko (< Eastern) and Yauré (< Southern) — see section 3.2, patterns are split in different TAMP constructions. In Table 2 and elsewhere, I classify languages as belonging to the “Guro” type if they have any phonologically unpredictable person-predicative marker forms, but no subject cross-reference. A language is classified as belonging to the “Guinean Kpelle” type if it has any instances of fusion, and cross-reference is attested in at least one TAMP construction in this language. Empirically, cross-reference is usually accompanied by abundant fusion affecting many

Table 2

S/Aux fusion and subject cross-reference in Mande

		Subject cross-reference	
		No	Yes
S/Aux fusion	No	<p>“Mandinka” type (9) Mandinka, Western Maninka, Bamana (< Manding) Kakabe, Koranko (< Mokole) Ligbi (< Jogo) Soso (< Soso-Jalonke) Soninke (< Soninke-Bozo) Bisa (< Eastern)</p>	— (0)
	Yes	<p>“Guro” type (7) Vai (< Vai-Kono) Seenku, Dzuun (< Samogo) Bobo (< Bobo) San (< Eastern) Guro, Wan (< Southern)</p>	<p>“Guinean Kpelle” type (12) Guinean Kpelle, Guinean Looma, Loko, Mende, Bandi (< Southwestern) Dan-Gwεetaa, Yauré, Gban, Ben (< Southern) Bokobaru, Boko, Kyanga (< Eastern)</p>

series of predicative markers. The distribution of types suggests an implicational relationship between the two parameters: no S/Aux fusion implies no cross-reference, and subject cross-reference implies S/Aux fusion. Clearly, both processes are innovations in Mande (Vydrin 2006; Konoshenko 2014), and S/Aux fusion may be the factor leading to the rise of subject cross-reference. There are at least two pieces of evidence supporting this idea:

- (a) in languages with robust fusion and cross-reference, there are non-fused, or basic, person markers, which tend to have limited co-occurrence with lexical subjects. This is further discussed in §3.1.
- (b) in some languages with fusion, e.g. in Yauré, the degree of fusion correlates with distributional properties of person markers: stronger fused forms do co-occur with noun phrases, less fused do not. I illustrate this case in §3.2.

3.1. Limited subject cross-reference with non-fused subject markers

In languages with no S/Aux fusion, there are constructions where there is no predicative marker or its use is restricted to transitive predications. Such constructions generally carry affirmative perfective meaning; this is illustrated in (13) from Mandinka. Accordingly, no affirmative perfective predicative marker is reconstructed for Proto-Manding (Creissels 1997) and Proto-Mande in general (Babaev 2011).

- (13) Mandinka (<Manding) (Creissels & Sambou 2013: 60)
Kew-ó jaŋkárí-ta.
 man-DEF fall.ill-PFV
 ‘The man fell ill.’

In languages with S/Aux fusion, there are also no traces of predicative markers in affirmative perfective constructions. Historically non-fused subject person markers, commonly labeled “basic”, are used in such cases. Table 3 shows a part of subject person marker paradigm in Guinean Kpelle, cf. Konoshenko (2017: 329) for the full paradigm.

Table 3

Subject person markers in Guinean Kpelle

Series	1SG	2SG	3SG	1PL.INCL	1PL.EXCL	2PL	3PL
Basic	<i>ŋé</i>	<i>é</i>	<i>è</i>	<i>gũ</i>	<i>kú</i>	<i>ká</i>	<i>dĩ</i>
Resultative	<i>ŋàǎ</i>	<i>yàǎ</i>	<i>àǎ</i>	<i>gwàǎ</i>	<i>kwàǎ</i>	<i>kàǎ</i>	<i>dàǎ</i>
Habitual	<i>ŋǎ</i>	<i>yǎ</i>	<i>ǎ</i>	<i>gwǎ</i>	<i>kwǎ</i>	<i>kǎ</i>	<i>dǎ</i>
Basic negative	<i>vé</i>	<i>hwé</i>	<i>hwě</i>	<i>gũhwé</i>	<i>kũhwé</i>	<i>káhwé</i>	<i>dĩhwé</i>

It can be seen in Table 3 that person-predicative markers have been derived from basic person markers by being fused with predicative markers, such as resultative **ǎǎ*, habitual **ǎ* and negative **hwé*. Basic subject markers are included into the paradigm because they are used in a specific TAMP construction, i.e. in affirmative perfective as shown in (14).

- (14) Guinean Kpelle (< Southwestern) (own field data)

Héni é wéi pà.
 Heni 3SG.B yesterday come\L
 ‘Heni came yesterday.’

In languages having both S/Aux fusion and subject cross-reference, e.g. in all Southwestern Mande including Guinean Kpelle, basic subject markers tend to co-occur with lexical subjects showing what could be interpreted as clitic doubling, presumably by analogy with cross-referencing person-predicative markers. However, and crucially for the present discussion, basic series tends to have restricted co-occurrence with lexical subjects in these languages.

In Southwestern Mande languages, except Guinean Kpelle, in affirmative TAMP constructions where basic person markers are used, cross-reference is only possible for subjects in plural, but not in singular, as illustrated in (15–18) from Mende:

- (15) Mende (< Southwestern) (Innes 1971: 134)

I ngenge-í wíé-ilɔ.
 3SG.B work-DEF do-PST
 ‘He did the work.’

- (16) Mende (< Southwestern) (Innes 1971: 134)

Mahɛ-í ngenge-í wíé-ilɔ.
 chief-DEF work-DEF do-PST
 ‘The chief did the work.’

- (17) Mende (< Southwestern) (Innes 1971: 134)

Tí ngenge-í wíé-ilɔ.
 3PL.B work-DEF do-PST
 ‘They did the work.’

- (18) Mende (< Southwestern) (Innes 1971: 134)

Mahɛ-í-sia tí ngenge-í wíé-ilɔ.
 chief-DEF-PL.DEF 3PL.BASE work-DEF do-PST
 ‘The chiefs did the work.’

In Guinean Kpelle, basic predicative markers do co-occur with lexical subjects in both singular and plural in affirmative constructions. Still, in negative constructions with basic negative markers (cf. Table 3), there is a similar asymmetry between singular and plural subjects, as shown in (19–20). With singular lexical subjects, a non-fused form of the negative marker *hwé* is used, which does not carry person features (20), as opposed to *hwě* 3SG.NEG marker used in anaphoric contexts (19). With plural lexical subjects, cross-reference is preferable (22).

- (19) Guinean Kpelle (< Southwestern) (Konoshenko 2017: 313)
Hwě *yìi* *hwólo* *ɲé.*
 3SG.B.NEG sleep\L day on
 ‘(S)he did not sleep during the day.’
- (20) Guinean Kpelle (< Southwestern) (Konoshenko 2017: 313)
Ñókòlo *hwé* *yìi* *hwólo* *ɲé.*
 DEF\child NEG sleep\L day on
 ‘The child did not sleep during the day.’
- (21) Guinean Kpelle (< Southwestern) (Konoshenko 2017: 313)
Dìhwé *yìi* *hwólo* *ɲé.*
 3PL.B.NEG sleep\L day on
 ‘They did not sleep during the day.’
- (22) Guinean Kpelle (< Southwestern) (Konoshenko 2017: 313)
Nèápèlɛɛ *dìhwé* *yìi* *hwólo* *ɲé.*
 DEF\child.PL 3PL.B.NEG sleep\L day on
 ‘The children did not sleep during the day.’

Hence, Guinean Kpelle generally follows the same pattern of limited cross-reference for basic person markers.

In Southern Mande languages from the sample, if there is subject cross-reference, it is obligatory for all series of predicative markers, except for Yauré, which has not presumably gone far enough in developing cross-reference, as discussed below in §3.2.

Therefore, an implicational statement holds for Mande:

- (i) *In a given language, if subject cross-reference is obligatory for basic subject markers, it is also obligatory for fused person-predicative markers.*

The fact that basic person markers show limited co-occurrence with lexical subjects as opposed to historically fused person-predicative markers suggests that fusion triggers the appearance of subject cross-referencing constructions in Mande.

3.2. Relative degree of fusion and subject cross-reference

So far S/Aux fusion has been treated as a binary parameter, e.g. in Table 3 above, where languages with both abundant and limited fusion are classified as belonging to the same category. This is obviously a simplification, since fusion is a gradual phenomenon, and various degrees of S/Aux fusion are sometimes observed in a single language.

Crucially, in languages developing subject cross-reference, the degree of fusion between subject markers and predicative markers tends to correlate with their ability to co-occur with full subjects.

For example, in Yauré (< Southern) there is a basic series and two series of fused person-predicative markers as shown in Table 4.

Table 4

Subject person markers in Yauré (Hopkins 1987 via Vydrin 2012: 597)

Series	Bare predicative marker	1SG	2SG	3SG	1DU	1PL.INCL	2PL	3PL
Basic	—	ǎ	ì	è	kù	kǎǎ	kà	ò
Negative	ká	bǎǎ	yá	yáá	kùá	kǎǎ	kàá	wòá
Optative	*é	ǎ	í	é	kú	kǎǎ	ká	ó

In the negative series, the formative -á is segmentable in all forms except 1PL.INCL, which generally tends to pattern divergently in Mande (Vydrin 2006). Optative series differs only tonally from basic markers,

but the former must have appeared as a result of fusion between basic markers and an optative marker, which is not synchronically traceable although comparison with Guro suggests that it could be **é*. Therefore, Yauré shows moderate fusion in the negative series and strong fusion in the optative series.

As expected, there is no cross-reference for basic series, these markers only appear as anaphoric devices in Yauré (23–24).

- (23) Yauré (< Southern) (Hopkins 1987: 32)

È *sò* *lá* *tó* *nǝ* *Kǝbú* *lè*.
 3SG.BASE cloth leaf one give.PFV Kuabu to
 ‘He gave one piece of cloth to Kuabu.’

- (24) Yauré (< Southern) (Hopkins 1987: 32)

Né *wúó*.
 baby cry.PFV
 ‘The baby cried.’

There is no cross-reference for negative series either; bare predicative marker *ká* is used after lexical subject (26), similarly to Guro (5).

- (25) Yauré (< Southern) (Hopkins 1987: 103)

Yàá *lò* *fǝǝ-lè* *dì*.
 3SG.NEG palm extract-NEG.PFV NEG
 ‘He didn’t make palm wine.’

- (26) Yauré (< Southern) (Hopkins 1987: 103)

Á *búí* **ká** *kǝ* *tó-lè* *dì*.
 1SG.INALN brother NEG house build-NEG.PFV NEG
 ‘My brother didn’t build a house.’

Crucially, it is the optative series with strongest fusion which shows obligatory cross-reference with lexical subjects in Yauré:

- (27) Yauré (< Southern) (Hopkins 1987: 51)

Ó *tá*.
 3PL.OPT come
 ‘May they come.’

(28) Yauré (< Southern) (Hopkins 1987: 51)

Bálá nù lábè ó kú fálá!
 sheep PL DEM 3PL.OPT go village
 ‘Let the sheep go to the village!’

Hence, another implicational statement can be formulated for Mande:

(ii) *In a given language, if subject cross-reference is obligatory for person-predicative markers with weaker fusion, it is also obligatory for person-predicative markers with stronger fusion.*

The major difference between languages discussed in §3.1 and Yauré data represented here is that the former languages have gone far enough in developing subject cross-reference, while Yauré is presumably only at the beginning of the same morphosyntactic path. In languages with well-established subject cross-reference, the *only* TAMP construction where there is *no or limited* cross-reference is the one where there has been *no fusion* between person and predicative markers. At the same time, in Yauré, the *only* TAMP construction where there *is* cross-reference is the one where *strongest fusion* between person and predicative markers must have taken place.

To conclude, the two types of split in the distributional properties of person-predicative markers illustrated in §3.1 and §3.2 are essentially instances of the same diachronic phenomenon, namely S/Aux fusion triggering the rise of subject cross-reference in Mande.

4. The rise of subject cross-reference in Mande: a diachronic explanation

4.1. S/Aux fusion and the rise of subject cross-reference in Mande against the standard model of agreement grammaticalization

The grammaticalization of subject cross-reference is typologically a very common process whereby anaphoric markers become local agreement markers (Givón 1976; Lehmann 2002 (1982); Siewierska 1999; among

others). It is largely assumed in literature that in the course of grammaticalization, discourse topics are reinterpreted as syntactic subjects “as a result of overuse” (Siewierska 2004: 263). Dislocated topic constructions with anaphoric person markers in subject position become pragmatically neutral clauses, where former topic occupies subject position and person marker cross-references the subject, e.g. a frequently cited change from *Pierre, il vient ici souvent* ‘As for Peter, he frequently comes here’ to *Pierre il-vient ici souvent* ‘Peter frequently comes here’ in colloquial French (Lamrecht 1981; Koeneman 2006; Kibrik 2011).

Thus, according to the standard theory of grammaticalization, person markers extend their distribution, become more frequent and informationally redundant when used with lexical subjects. It is then hypothesized that semantic change leads to formal reduction, e.g. “desemantization precedes and is immediately responsible for decategorialization and erosion” (Heine 2003: 583). Semantic (and pragmatic) change is usually seen as the driving force for subsequent morphological and phonetic reduction.¹

However, Mande languages provide evidence that S/Aux fusion is an independent process which is not triggered by semantics. First, fusion is attested in languages which have no subject cross-reference, i.e. the “Guro type”. Second, in Mande languages with S/Aux fusion, phonetic fusion strongly affects 1st and 2nd person markers which do not co-occur with lexical subjects and hence they do not appear in cross-reference constructions, so phonetic change cannot be attributed to semantic redundancy in such cases. Therefore, fusion is undoubtedly an independent process in these languages, which is arguably triggered by general phonotactic restrictions applying to lexical items as well as highly frequent clitic complexes, e.g. the notion of phonological *foot* in Mande in Vydryn (2008b).

¹ Siewierska (2004: 268) discusses phonological erosion as one of possible driving forces in the grammaticalization of agreement, but only for later stages of grammaticalization, when the so-called ambiguous agreement markers, which can be used both anaphorically and with local controllers, become purely syntactic agreement markers, always co-occurring with local controller NP.

Moreover, as demonstrated in Section 3, there is evidence that phonetic fusion triggers the rise of subject cross-reference in Mande, rather than the other way round. Hence, the largely assumed model of reduction following semantic and syntactic change is not applicable to Mande data. This, obviously, calls for another model explaining how subject cross-reference is grammaticalized in Mande.

4.2. Explaining the rise of subject cross-reference in Mande

To account for the way S/Aux fusion triggers subject cross-reference in Mande, I adopt the general framework of usage-based grammar which sees grammar as “a cognitive organization of one’s experience with language” and claims that patterns of usage may affect their representation in grammar and, consequently, language change (Bybee 2003: 711; and references therein).

In more concrete terms, we should explain how languages of the “Guro type” having S/Aux fusion but no subject cross-reference, evolve into those having subject cross-reference. My explanation is based on three observations.

(a) It has been shown that lexical subjects have low discourse frequency (Givón 1983, du Bois 1987). This is supported by my own tentative statistics based on one Guinean Kpelle narrative about marriage traditions: in the first 110 clauses with 3 person subjects, there are 33 predications with full lexical subject, and 77 clauses with pronominal subject. Since non-fused predicative markers only occur with lexical subjects in TAMP constructions with S/Aux fusion but no subject cross-reference, cf. e.g. (5–6) in Guro, they must have low frequency in discourse as well.

(b) In TAMP constructions with advanced degree of S/Aux fusion, bare predicative markers are strongly eroded up to the point of being totally unferrable from the fused person-predicative forms. For example, in Guro, the combination of 2PL pronoun *kā* and irrealis marker *é* yields *ká* (Kuznetsova & Kuznetsova 2017: 832). In fused forms, person markers tend to retain their segments, usually initial consonants

and sometimes vowels, whereas the segmental material of predicative markers often disappears and only their tone is retained.

(c) Wherever a predicative marker is used in a given TAMP construction, the Aux slot is obligatorily filled. Although, as observed in 3.1, there may be no predicative marker in affirmative perfective and some other constructions, if there *is* a predicative marker in a given TAMP construction, it cannot be omitted.

I argue that in TAMP constructions with advanced degree of S/Aux fusion and no cross-reference, non-fused predicative markers are likely to be *paradigmatically* substituted by 3rd person subject markers after lexical subjects. This happens because (a) non-fused predicative markers have low frequency and (b) they cannot be inferred from more frequent person-predicative forms, so there is little morphological evidence of how a non-fused predicative marker should look like. Still the syntactic template demands that the Aux slot be filled (c), so speakers choose to use more frequent and hence better mentally activated 3rd person subject forms with lexical subjects. This essentially yields a cross-reference construction: NP_S Aux → NP_S S/Aux. Hence, person-predicative markers extend their distribution from anaphoric to cross-referencing markers after lexical subjects.

Note that the standard approach to the grammaticalization of agreement suggests a *syntagmatic* shift from topic constructions to pragmatically neutral constructions (Givón 1976). The model advanced here rather assumes a *paradigmatic* shift from bare to fused predicative markers in pragmatically neutral constructions.

4.3. Predictions of the model and the unstable “Guro type”

The model of change outlined in Section §4.2 relies on the fact that predications with lexical subjects and non-fused predicative markers have low textual frequency, and predicative markers are not easily reconstructable from strongly fused person-predicative markers. It predicts that bare predicative markers are likely to be lost if they co-exist with strongly fused person-predicative markers. In other words, it presupposes that TAMP constructions with strong S/Aux fusion and

no cross-reference should be unstable and hence not very common. Languages classified as belonging to the transitional “Guro” type are indeed least numerous in my sample (there are seven of them as opposed to nine of “Mandinka” type and twelve of “Guinean Kpelle” type, cf. Table 2), and they provide evidence in favour of my hypothesis.

In Vai (< Vai-Kono), S/Aux fusion mostly affects 1sg forms; and other combinations of person and predicative markers remain morphologically transparent (Welmers 1976).

In Bobo (< Bobo) and San (< Eastern), predicative markers are symmetrically reduced after lexical as well as anaphoric subjects. In Bobo, the difference between basic person markers and fused person-predicative markers is only tonal. In 3rd person subject markers, the tone of predicative marker is suffixed to the person marker, e.g. basic 3sg *à* with low tone vs. non-past 3sg *ā* low-mid vs. negative 3sg *ǎ* low-high (Le Bris & Prost 1981) as shown in Table 5.

Table 5

Subject person markers in Bobo

Series	Bare predicative marker	1SG	2SG	3SG	1PL.INCL	1PL.EXCL	2PL	3PL
Basic	—	<i>mā</i>	<i>bē</i>	<i>à</i>	<i>mè</i>	<i>kè</i>	<i>kā</i>	<i>yè</i>
Non-past	˘ (mid tone)	<i>mā</i>	<i>bē</i>	<i>ā</i>	<i>mē</i>	<i>kē</i>	<i>kā</i>	<i>yē</i>
Negative	ˊ (high tone)	<i>má</i>	<i>bé</i>	<i>ǎ</i>	<i>mě</i>	<i>kě</i>	<i>ká</i>	<i>yě</i>
Imperative		-	-	∅	-	-	<i>kà</i>	-

With lexical subjects, predicative marking is similarly realized as suffixal tone linked to the last syllable of the subject noun phrase. Hence in Bobo, predicative marking is the same in anaphoric contexts and with lexical subjects (29–30).

(29) Bobo (< Bobo) (Le Bris & Prost 1981: 62)

Yē *kpìn* *mènē*.
 3PL\PRS beer drink\PRS
 ‘They drink beer.’

- (30) Bobo (< Bobo) (Le Bris & Prost 1981: 62)

Yà-rā *kpìn* *mènē*.
 woman-PL\PRS beer drink\PRS
 ‘Women drink beer.’

In San, most predicative markers are transparent with no allomorphy, but some of them do have variable exponence. For example, predicative marker *tá* surfaces as *tá* after nasals and as *á* elsewhere. It does get fused with 1SG, 3SG, 1PL, 2PL person markers, but the choice of forms is phonological: all these markers end with a vowel, not a nasal, cf. Table 6.

Table 6

Subject person markers in San

	Bare predicative marker	1SG	2SG	3SG	1PL	2PL	3PL
Basic		<i>mā</i>	<i>n̄</i>	<i>à</i>	<i>wō</i>	<i>kā</i>	<i>ñ</i>
Imperfective	<i>tá / á</i>	<i>máá</i>	<i>n̄ tá</i>	<i>áá</i>	<i>wóá</i>	<i>káá</i>	<i>ñ tá</i>

Predicative marking is symmetric after anaphoric and lexical subjects in San in that it is consistently *tá* after nasal (31–32) and *á* after vowel (33–34).

- (31) San (< Eastern) (Paré 1998: 33)

N *tá* *dīē* *kānā*.
 2SG.BASE IPFV come\IPFV here
 ‘You usually come here.’

- (32) San (< Eastern) (Paré 1998: 38)

Lj *lè-ŋ* *tá* *bòé* *lè* *sīē*.
 woman\PL def-PL IPFV goat DEF sell\IPFV
 ‘The women sell the goat.’

- (33) San (< Eastern) (Paré 1998: 38)

Áá *kākā*.
 3SG.IPFV be.strong
 ‘He is well.’

(34) San (< Eastern) (Paré 1998: 38)

L̄ɔ l̄ɛ = á b̄òé l̄ɛ s̄l̄ɛ̄.
 woman def=IPFV goat DEF sell\IPFV
 ‘The woman sells the goat.’

Moreover, there are predicative markers that do not undergo fusion in San, e.g. an invariable negative progressive marker *b̄ɛ̄* (Paré 1998: 36).

Out of the four remaining languages of the “Guro” type, three — Dzuun, Seenku (< Samogo) and Wan² (< Southern) — have only one series of fused person-predicative markers. The last one, Guro itself, has the strongest degree of fusion. Its four series of person-predicative markers reveal an ongoing process of fusion with much synchronic variation.

Overall, constructions with asymmetric predicative marking, i.e. with bare marker after lexical subjects and fused person-predicative marker for anaphoric subjects, are quite limited in languages of the “Guro” type corroborating our model outlined in §4.2.

5. Conclusion

The paper shows how S/Aux fusion influences the distributional properties of subject person markers, which extend their use from purely anaphoric contexts to subject cross-reference in Mande. Contrary to the standard theory of grammaticalization, which assumes that formal, i.e. phonological and morphological, changes generally follow semantic and syntactic change – cf. Heine (2003), and references therein; in Mande it is rather phonetic fusion between person and predicative markers that triggers the rise of subject cross-reference. Instead of a *syntagmatic* change from dislocated topic constructions to pragmatically neutral constructions advocated in the standard approach to agreement grammaticalization, Mande data are better explained by assuming a *paradigmatic* change, whereby non-frequent bare predicative markers are

² There are also imperative person-predicative markers in Wan, which are not counted here because they are not used with 3rd person forms.

replaced by fused person-predicative markers within the same syntactic slot.

The fusion between person and predicative markers is an areal phenomenon in languages of the so-called Macro-Sudan belt (Anderson 2011). Hence, the model presented here can be tested on other language groups of the area. Some preliminary data from Kwa and Kru languages suggest that the dispreference for strong S/Aux fusion with no cross-reference holds true in those languages as well.

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Abbreviations

AUX – auxiliary	IPFV – imperfective	PST – past
B – basic subject marker	IRR – irrealis	QUOT – quotative
DEF – definite	L – low tone	REFL – reflexive
DEM – demonstrative	NEG – negative	REL – relative
EXCL – exclusive	OPT – optative	RES – resultative
GER – gerund	PL – plural	SBJV – subjunctive
HAB – habitual	PFV – perfective	SG – singular
INCL – inclusive	PROG – progressive	SUP – supine
INDEF – indefinite	PRS – present	TAMP – tense, aspect, modality and polarity

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