

Grammaticalization of number: From demonstratives to nominal and verbal plural

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Abstract

There are two aims of the present paper: to demonstrate the similarity between plural markers (nominal and verbal) and demonstratives in one family of languages (Chadic); and to offer an explanation for grammaticalization of demonstratives (including singular demonstratives) into the plural markers. A set of hypotheses provides an explanation for the following typological characteristics: the connection between demonstratives and nominal and verbal plural markers; and the connection between nominal and verbal plural markers. The grammaticalization processes may explain the formal syncretism between nominal and verbal plural markers and demonstratives observed in languages from different families. Hence the grammaticalization history of languages may be one of the underlying reasons for their typological characteristics.

Keywords: Chadic, demonstratives, ergative, grammaticalization, nominal plural, verbal plural

1. The problem and the background

The connection between plural and definiteness has been observed in many languages and this connection may have different forms. In some languages the markers of plurality are identical with the demonstratives and the markers of definiteness, e.g., in Khasi (Mon-Khmer), Hawaiian, Maung (Australian), and French (cf. Dryer 1989 and references there). If one considers this fact to be accidental, one closes out the possibility of explaining the potential relationship of the two categories. Frajzyngier (1977: 55) postulates that some segmental nominal plural markers in Chadic¹ derive from demonstratives. In that study, however, no explanation is provided for this process. Heine & Reh (1984: 280) give 3rd

person plural pronouns and collective markers as a source for plural affixes. Lehmann (1982: 58–61) presents a systematic discussion of the grammaticalization of number in the nominal system from collectives and plural demonstratives, invoking among others data from Ewe and Yoruba (Kwa), Yucatec (Mayan), and Mangarayi (Australian). Wolff (1995) provides further support for the derivation of nominal plural markers from demonstratives in Hausa, a Chadic language, but he does not explain how this process came about. The importance of the explanation proposed in the present paper is that it may account for the similarity between demonstratives and plural markers in other languages.

In many languages there also exists a category of verbal plural with a variety of functions, including the coding of the number of arguments and the plurality of events (Frajzyngier 1965, 1977, 1985a; Durie 1986; Mithun 1988; Newman 1990; Corbett 1992; Langdon 1992). In some languages nominal and verbal plural markers are phonologically similar (Frajzyngier 1977; Mithun 1988; Newman 1990). Those similarities imply one of three possibilities: First, the nominal plural markers developed from the verbal plural markers. This possibility is proposed in Frajzyngier (1977) with respect to consonant gemination, syllable reduplication, and the insertion of vowel *a* for Chadic. Mithun (1988) postulates this direction for a number of North American languages. The second possibility is that the verbal plural markers developed from the nominal plural markers. Newman (1990: 118) postulates this direction for some verbal plural markers in Chadic without, however, providing evidence for this direction. The third possibility is that both nominal and verbal segmental plural coding developed from the same source. With respect to some verbal plural markers, Lehmann (1982) explains their origin as affixation of anaphoric plural pronouns. He does not address, however, the crucial question, viz. why the anaphoric pronouns are added to the verb or how the anaphoric markers, other than plural anaphors, become verbal plural markers. In the present paper I propose an explanation for the emergence of both nominal and verbal plural marking from a set that comprises deictics, determiners, and anaphors in one family, Chadic. The term “deictic” as used here defines an independently occurring morpheme referring to an object, place, or time in the environment of speech. Some deictics may be pronominal, referring to the first, second, or third person. The term “determiner” refers to an element modifying a noun phrase. Some determiners may be deictic, and others may be anaphoric. The term “anaphor” as used in the present paper is defined as a marker recalling a previously mentioned noun phrase. Some anaphors may also be pronominal, referring to a third person mentioned earlier in discourse.

2. Typological characteristics of number coding in Chadic

Number coding in Chadic is typologically different from number coding in most Afroasiatic and Indo-European languages, but quite similar to number coding in several Amerindian languages (Frajzyngier 1985a; Durie 1986; Redden 1986; Mithun 1988; Langdon 1992). The typological characteristics of number coding in Chadic languages can be placed on continua using several parameters.

First, some languages (Hausa [West] and Logone [Central]) have a rich system of plural markers in the nominal system, and other languages (Gwandara and Pero [West]) do not have any number distinction in their nominal system (Frajzyngier 1977).² The absence of nominal plural forms in Gwandara is striking in view of the fact that it is the language most closely related to Hausa, which has one of the richest systems of nominal plural formation of any Chadic language.

Second, the fundamental difference between languages where plurality is coded by inflectional means, such as Indo-European and Semitic, and Chadic is in the use of plural forms. In Indo-European and Semitic languages the plural form must be used whenever the referent is plural. Mithun (1988), in analyzing plural coding in some languages of North America, points out that the nominal and verbal plural markers cannot be considered inflectional morphemes, i.e., morphemes that have to be present in all members of the lexical class. Instead she postulates them to be derivational morphemes. Third, in some languages the nominal plural markers are morphemes that cannot be separated from the nouns that they mark, and in other languages plural markers are not attached to the noun but rather are constituents of the noun phrase.

In the majority of Chadic languages, even if a language has nominal number coding, its use is said to be “rare” or “optional”. In no Chadic language can the nominal plural marker, even if bound to a noun, be said to be an inflectional morpheme in the sense of being obligatory when the referent of the noun is more than one. In some languages, e.g. Masa (Masa branch), nominal plural markers are limited to a very narrow range of nouns, mainly humans and animates (Cattucci 1983; Frajzyngier fieldnotes), supporting the hierarchy proposed in Smith-Stark (1974). Following Bybee’s definition of inflectional category, “a morphological category is inflectional if some member of the category obligatorily accompanies the radical element when it occurs in a finite clause” (Bybee 1985: 11), nominal plural markers in Chadic languages are never inflectional.

The three characteristics, viz. less than perfect cross-language distribution, less than perfect cross-noun distribution, and phrasal versus word

host, are considered by Lehmann (1982) to represent initial stages of grammaticalization of number. In addition, Chadic languages are characterized by the following: an undetermined meaning of the unmarked form of noun with respect to the feature number, a rich system of coding number on verbs, an identity or similarity of verbal and nominal plural markers, and ergative characteristics of plural coding on the verb. Here is a brief elaboration of these additional four characteristics.

In many Chadic languages the meaning of the unmarked form is not necessarily singular. For nouns, instead of the opposition singular vs. plural and/or dual as the case may be in Indo-European or Semitic languages, in all Chadic languages the unmarked form does not necessarily indicate singular. Its meaning is close to what Corbett (1992), following Andrzejewski (1960), calls "general". Jarvis, writing about plural in Podoko, states: "Le nom 'singulier' a une valeur neutre, c'est-à-dire qu'il peut avoir un sens singulier ou pluriel. Par exemple, *nawá* (lit. chèvre ma) peut signifier 'ma chèvre' ou 'mes chèvres'" (Jarvis 1989: 54). The description of the unmarked noun in Podoko can be generalized to all other Chadic languages. The unmarked nature of nouns with respect to the feature number explains why the use of the nominal plural markers is said to be "optional". Absence of the plural marker does not imply singular meaning. Since a great majority of Chadic languages have verbal plurality markers, when these are used, the nominal plural marker, if any, may be omitted. For example, in Moñu-Gudur, the nominal plural marker *hay* may be omitted if the verb is marked for plural:

- (1) *áhwam hay a hánáwa*
mouse PL 3 leave.PL
'Mice leave.'
(2) *áhwam káa a macan táhivá*
mouse DEM 3 die.PL all
'All mice die.'
(Barreteau 1988: 58)

The meaning of the unmarked form may be construed as singular or plural depending on the construction in which it occurs and also depending on the discourse environment.

Many contemporary Chadic languages have a more or less elaborate system of plural coding of verbs through reduplication of syllable and gemination. The type of plurality encoded involves frequentative action, iterative action, subject of intransitive verb, object of transitive verb (Frajzngier 1965, 1977, 1979, 1985a; Pawlak 1975; Newman 1990; Al-Hassan 1995) and in some languages the plurality of subject of transitive or intransitive verb (Schuh 1978; Frajzngier 1980; Newman 1990).

Since the plural form of the verb may be construed as encoding any of these functions, it does not imply any single specific function, except for languages where it encodes the number of subject. At best a specific function may be deduced from the lexical meaning of the verb, the types of arguments, and the discourse environment. Some languages have a very rich system of number coding in the verb, and others have a very limited number coding in the verb. For languages with the ergative type of number coding, if number is coded on the verb, it does not have to be coded on the object. For example, in Xdi there is a nominal plural marker *xá*. Xdi also has plural verbs. Usually, if the plurality of the object is to be expressed, the plural verb is chosen (when available) and no plural marker is added to the object (all Xdi data from Frajzngier & Shay 1996):

- (3) *há yá xáná mbísa gú á wá*
cow DEM slaughter.PL Mbísa goat NEG NEG
'It is cow that Mbísa slaughtered and not a goat.'³
(4) *há yá xná-lá gú á wá*
cow DEM slaughter-INDEX goat NEG NEG
'It is a cow that was slaughtered and not a goat.'
(INDEX = unspecified human subject)

Some verbs are inherently plural, and then the coding of plurality on the object is optional:

- (5) *tá dzáwá-i-dzáwá-i tá há-(xá)*
IMPF sell.PL-POT-sell.PL-POT OBJ cow-(PL)
'He sells cattle.' (IMPF = imperfective, POT = potential aspect marker)
If the chosen verb is singular and the explicit coding of plurality of the object is intended, the plural marker is added to the object:
(6) *tá skwá-i-skwá-i tá há-xá*
IMPF buy-POT-buy-POT OBJ cow-PL
'He buys cows.'

In languages in which a marker on the verb codes the plurality of a transitive or an intransitive subject, such a marker is often the only marker of plurality of the subject, and in those cases can be considered part of a discontinuous morpheme of a plural pronoun (cf. also Newman 1990).

In many languages the nominal and verbal plural markers are identical or very similar. This point is amply illustrated and argued for in the sections on grammaticalization of nominal and verbal plural markers further in this paper.

Most segmental number coding in Chadic languages displays ergative characteristics, viz., number coding on the verb encodes a plural subject of an intransitive verb or a plural affected argument of a transitive verb (Frajzyngier 1983a). In a few languages, in addition to ergative number coding, there also exists nominative-accusative number coding, where the plural marker on the verb encodes plurality of subject only, of a transitive or an intransitive verb (Schuh 1978; Frajzyngier 1980; Newman 1990).

The paper has three general goals: to provide evidence of the grammaticalization of nominal and verbal plural coding from demonstratives; to provide several hypotheses regarding syntactic and morphological mechanisms of grammaticalization and semantic cognitive motivations involved in the process (I will explain why quite different processes of grammaticalization of nominal and verbal plural markers may result in similar markers of plurality); and to discuss implications of the findings for the goals and methodology of historical reconstruction. The seven typological characteristics outlined in the preceding section are consistent with the postulated grammaticalizations and the proposed chronology of these processes. The proposed grammaticalization is therefore an explanation for these typological characteristics. The explanation of the grammaticalization processes constitutes additional support for the hypothesis about the origin of the markers. The interest of the grammaticalization of both types of plurals in Chadic is that it is different from the grammaticalization in Amerindian languages as postulated in Langdon (1992) and Mithun (1988).

3. The origin of segmental markers of plurality: A hypothesis

Newman (1990) proposes the following as reconstructed forms of Proto-Chadic nominal plural markers: **-aki*, **-ni*, **-i*, and **-d'(j)*. In addition there are many other segmental markers coding plurality in individual languages, such as the "internal plural" marker *u*, and the markers *u* and *s*. I propose that all these markers (with the exception of gemination and reduplication) originated as deictics, pronouns, definite markers, or anaphors. Moreover, segmental verbal plural markers derive from the same source. The interest of this hypothesis lies in the fact that it does not constrain the derivation of the plural markers from demonstratives that are plural. Hereafter I will use the terms "pronouns" and "demonstratives" interchangeably in reference to pronouns and anaphors as well as deictics and definite markers, since I will assume that they all belong to the same grammaticalization chain, as demonstrated in many cross-language studies (Greenberg 1978; Schuh 1983; Frajzyngier 1996a). The plural markers developed from one or more elements of the grammatical-

ization chain that includes deictics, demonstratives, anaphors, and pronouns. Each element in the chain may be a source of nominal and verbal plural markers, as illustrated in Figure 1.

Figure 1 does not imply that the same morphemes necessarily become plural markers in nouns and verbs, nor does it imply that the grammaticalization of the two types of plural markers took place at the same time. It is quite possible that different elements in the grammaticalization chain gave rise to different plural markers, and it is quite possible that different plural markers developed at different times.

The advantage of the proposed hypothesis consists of its being able to explain why the nominal and verbal markers are similar and often identical, and also why both verbal and nominal plural markers are similar to deictics, demonstratives, and anaphors. The evidence for the hypothesis is syntactic, in so far as the syntax of the nominal plural markers in languages representing all branches of Chadic is identical with the syntax of demonstratives, as well as phonological, in so far as plural markers are identical with or similar to a demonstrative in the same language or in related one. Such similarity is considered to be evidence of the markers' being cognate; their differences can be accounted for by otherwise-attested phonological changes. Additional evidence is provided by the fact that there are only two types of morphemes with which the plural markers are identical or similar: demonstratives and a few cases of the lexeme 'people'.

4. Syntactic evidence for nominal markers

Syntactic evidence for the hypothesis about the origin of the nominal plural markers comes from the fact that in a number of languages nominal plural markers behave like determiners, viz., they occur after the modifiers and after previous reference markers, if any. The plural markers often occur in phrase-final position. This phenomenon has been observed in languages from the West and Central branches. In Mupun the plural

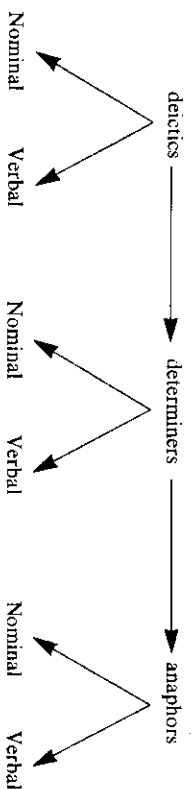


Figure 1. Grammaticalization of demonstratives into nominal and verbal plural markers

marker *mo* is not an inflectional morpheme but rather a syntactic determiner marking the noun phrase. It occurs after a modifier (7), after a definite marker (8), in noun phrase final position (9), and also after possessive pronouns (10):

- (7) *jivap de wurag mo*
girls REL tall PL
'tall girls'
(Frajzyngier 1993: 164)
- (8) *n-kok duri na mo kadag/jir*
1SG-take.PL yam DEF PL all/each
'I took all the yams' or 'each of the yams'
(Frajzyngier 1993: 146)
- (9) *du na mo pian kadag*
calabash DEF PL break.PL all
'All the calabashes are broken.'
(Frajzyngier 1993: 147)
- (10) *yi kok le fi mo kadag*
2F pack cloth 2F PL all
'Pack all your cloth.'
(Frajzyngier 1993: 148)

Only if the head noun is not modified by another element does the plural marker follow the noun:

- (11) *n-sin mbi mo n-wur dik dik*
1SG-give thing PL PREP-3F different
'I gave her things at different times' or 'I gave her different things.'
(Frajzyngier 1993: 164)

In Daba (Central) the nominal plural marker follows a possessive, numeral, and adjective, if any (cf. Mouchet 1967: 57). In addition, the plural marker can be separated from the head noun in the following Central Chadic languages: Mina (own fieldnotes), Zulgo (Haller 1989), Moŋu-Gudur (Barreteau 1988), and Margi (Hoffmann 1963).

In Horna (Central) the plural marker comes at the end of the conjoined noun phrase rather than after each head noun:

- (12) *nau kamsih-di rim ondo ta likk-ia*
1MPF tailor-DEF make trousers ASSOC shirt-PL
'This tailor makes shirts and trousers.'
(own fieldnotes)

The nominal plural marker in Margi can be omitted if plurality is indicated by some other morphemes in the clause (Hoffmann 1963: 57). The most frequent plural marker in Margi, *-yâr*, appears to be a morpheme added to the noun phrase rather than to the noun. Compare the following example of a possessive construction:

- (13) *ndâr gè lji-yâr ku*
word GEN god-PL DEM
'these words of God'
(Hoffmann 1963: 59)

How the plural marker came to be attached to the noun in Chadic languages is described in the section on the grammaticalization of nominal plurals.

5. Phonological evidence for nominal markers

5.1. Identity of plural markers and determiners

The general picture of the situation in Chadic languages is as follows. In some languages the plural markers are phonologically identical with demonstratives; in others, the plural markers are similar to demonstratives in a manner that suggests that they are cognates. First I will give examples of languages from three branches in which plural markers and demonstratives are identical. This identity, when replicated in several languages, provides evidence of the historical relation between the plural markers and demonstratives. This relationship is best explained by postulating that the two markers belong to the same grammaticalization chain. In what follows, languages are arranged according to the Chadic classification in Newman (1992): West, Central, East, and Masa.

The plural marker in Mupun (West) is *mo*. It can be used with ordinary nouns or with proper names, where it results in an associative plural (cf. Moravcsik 1995):

- (14) a. *saar mo*
hand PL
'hands'
b. *James mo ji byun pak an*
James PL come say something 1SG
'James and company told me something.'
(Frajzyngier 1993: 143)

The marker *mo* is identical with the 3rd person plural pronoun and demonstrative that functions as a subject or object pronoun and object of preposition:

- (15) *mo ka seet kadag*
3PL PERF go all
'They are all gone.'
(Frajzyngier 1993: 147)
- (16) *a cin mbi de val de sa mo*
2M do thing REL 1WO REL DEM PL
'You must do these two things.'
(Frajzyngier 1993: 514)

In Pa'a (West) one of the nominal plural markers is *-i*. The marker *i* is also the 3rd person masculine object pronoun (Skinner 1979).

Bade (West) has an elaborate system of nominal plural coding that contains a large number of very diverse markers, as described in R. Lukas (1967:68). For two of these markers, viz. *-an* and *-a-*, there exist corresponding demonstratives within the language. Thus in Gashua Bade, all masculine demonstratives have the initial vowel *a*, e.g., *-áaw*, *-áani*, and *-áaniú* (or *nar*, *far*, and 'particular' demonstratives (Schuh 1977: 108). These pronouns, therefore, can be analyzed as consisting of a person marker and a distance marker. There is also a marker *ad* for which R. Lukas (1967/68: 213) gives only one example, *káaz-ád-á-n* 'chickens' from *káaz-á-n* 'chicken'. In very closely related Ngizim, there is a pronoun *dáai* 'a, certain, some' that probably consists of two morphemes, *dá* and *gai*. The marker *dá* appears to be related to the plural marker *-d-*. There is also a pronoun *gáyí* described by Schuh (1981: 72) as semantically equivalent of *dáai*. Thus for three plural markers in Bade, there are equivalents in the Bade demonstrative system.

In Sayanci (Zaar) (West) there are two plural markers, *(t) sy* and *-ši*. The second marker is identical with the 3rd person plural anaphor *-ši* (own fieldnotes). The importance of this fact is that *s* is a rare nominal plural marker in Chadic, and yet when it occurs it has a phonologically and semantically similar element in the anaphoric system.

In Xdi (Central) there are a few nouns whose plural is formed through the suffix *i*, e.g., *zún-i* 'child', *zún-i* 'children'. There is also in Xdi a 3rd person plural pronoun *i* used only in subject constructions when the pronoun precedes conjoined noun phrases:

- (17) *i mbisá ndú p'ünü tá lá-yú-i tá lünü gá*
 DEM.PL Mbisa ASSOC Phinta FOC go-EXO-PERF PRER market PRER
s'rdák káwá dága
 morning together
 'Mbisa and Phinta went together to the market this morning'

(FOC = 'subject focus marker', EXO = 'exocentric extension')
 (Frajzyngier & Shay 1996)

In Mina (Central) the plural marker is *ii*, identical to the third person independent plural pronoun, *ii* (own fieldnotes):

- (18) a. *gidwir-ii tá táng*
 pot-PL GEN 3PL
 'their pots'
 b. *gidwiri tá táng*
 pot GEN 3PL
 'their pot'

The 3rd person plural pronoun is also *ii*:

- (19) *ii zék yáw*
 3PL. exude showing off
 'They are showing off.'

Among Logone (Central) plural markers there are suffixes *-i* and *-e* with various tone configurations. There are also corresponding previous reference markers *-e* for masculine nouns and *-ne* for feminine nouns (Lukas 1936: 32).

In Gidar, a language isolate within the Central Chadic branch, one of the nominal and verbal plural markers is *i* (all information on Gidar is from own fieldnotes):

- (20) Singular Plural Gloss
gúl *gil-i* 'woman'
dáfa *d-i* 'person'
zilé 'my husband' *zél-i* 'men'

The importance of the data in Gidar is that one of its nominal plural markers is identical with the 3rd person singular rather than the 3rd person plural pronoun. The cognate pronoun is the 3rd person masculine singular subject pronoun in the imperfective. In order to prove the formal identity I present a full paradigm of subject markers occurring with the matrix clause imperfective marker in Gidar in Table 1.

In Cibak (Central), all plural subject pronouns contain the component *-r* as the marker of plurality (Hoffmann 1955: 128), as shown in Table 2.

Table 1. Subject markers in the imperfective in Gidar

Person	Singular	Plural
1st	<i>in-tá-i</i>	<i>máán-tá-i</i>
2nd	<i>is-tá-i</i>	<i>má-nó-kám tá-i</i>
3rd masculine	<i>tá-i</i>	<i>tá-g and tá-i</i>
3rd feminine	<i>tá-i</i>	

Table 2. Subject pronouns in Cibak

Person	Singular	Plural
1st	<i>yí</i>	<i>yér</i>
2nd	<i>gá</i>	<i>gár</i>
3rd	<i>dzá</i>	<i>dár</i>

The genitive marker in this language is *-r*. In most Chadic languages genitive markers derive from demonstratives, as evidenced by the frequent phonological similarity between the two forms (cf. also Schuh 1990). The identity between the plural pronominal marker and the genitive marker can be explained by their common origin. Given the identity of the plural nominal markers and genitive markers, and given the fact that the genitive markers derive from the demonstratives, one can say that the pronominal plural markers may also derive from the demonstratives.

Ga'anda (Central) has the plural marker *ca*, and a relative marker *ca* (Ma Newman 1971: 119). The similarity between the two markers is interesting. There is no known process by which a relative marker is derived from the inflectional plural marker on nouns. And there are no known processes by which the plural marker is derived from a relative clause marker. But relative markers in various Chadic languages are derived from demonstrative pronouns (Frajzyngier 1987). The situation in present-day Ga'anda reflects a past in which a demonstrative pronoun became a plural and a relative marker, as in Figure 2.

In contemporary Ga'anda only the products of functional extension have been preserved. There is no demonstrative with *ca*, which indicates that whatever form the demonstrative had, quite possibly a velar stop and a front vowel, it was subsequently replaced by other forms.

In Hona (Central) one of the plural markers is *-yá*:

(21) *kwálanbí kwálanbí-yá* 'bottle'

The marker *-yá* is also a component of proximate demonstratives *di-yá* 'SG' and *ní-yá* 'PL':

(22) *kwálanbí-di-yá* 'this bottle'
kwálanbí-y-ní-yá 'these bottles' (own fieldnotes)

Hence in Hona one of the plural markers is identical with a demonstrative.

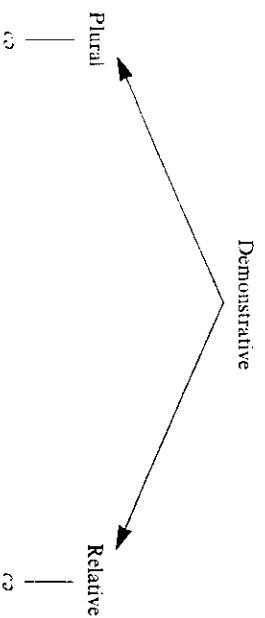


Figure 2. Grammaticalization of plural and relative markers in Ga'anda

A rare nominal plural in Xdi provides one of many examples of how the plural morphemes might have emerged. The term for 'Xdi people, speakers of Xdi' consists of the word *Xdi* followed, not by the productive plural marker in the language, *xá*, but rather by the 3rd person plural pronoun used as subject and object marker and as object of prepositions:

(23) *xá-xáŋ* → [xáxəŋ]
 Xdi-3Pl
 'Xdi people'

There are several markers of nominal plural in Gude (Central). One of them, [-i-], is claimed by Hoskison (1983) to be underlyingly /ya/. The plural marker *-i* derives from the plural demonstrative or pronoun *i*, as evidenced by the construction frequent in Chadic languages meaning 'X and company'. Such constructions, called 'associative plural constructions' by Moravcsik (1995), are formed in Chadic by the plural pronoun or demonstrative that precedes or follows (as in example [14] from Mapun) a noun or a noun phrase. Here is an example from Gude:

(24) *i Musa*
 'Musa and others' (Hoskison 1983: 66)

There are two kinds of nominal plural in Kera (East). One is collective, marked by the suffix *ŋ*, and the other is a part of gender affixes. The form *ŋ* is the definite marker in Kera, e.g. *háŋé*, def. *háŋəŋ* 'woman' (Ebert 1979: 165). Recall that definite markers in Chadic, as in many other languages, are part of the grammaticalization chain that includes demonstratives. The data from Kera are important because the identity of the collective and the definite markers indicates that they both developed from the same source, which is no longer preserved in the language. Kera has also the 3rd person plural pronoun *-i*. Although that pronoun did not grammaticalize to become a plural marker in the nominal system, it is evidence that the plural markers with *i* in other Chadic languages developed from the pronominal or demonstrative system.

One of the markers of nominal plural in Masa (Masa branch) is *-na*, e.g. *zi-i-ta* 'house', pl. *zi-i-na*. This marker is identical with the masculine singular and plural determiner.

To summarize: In fifteen languages out of the sample of some thirty-five, at least one nominal plural marker is identical with a demonstrative within the same language. Since several plural markers are involved, e.g. *mo*, *na*, *ŋ*, *i*, *ca*, *ŋ*, this identity cannot be accidental. The vowel *i* is a marker of 3rd person singular subject in several Semitic and Cushitic languages (cf. Hetzron 1990: 585), hence its presence in Chadic is very likely a retention from the Proto-Afro-Asiatic period. But it has been

retained as a pronoun, not as a plural marker. The connection between plural markers and demonstratives can represent either a synchronic derivation within each language or a retention from an earlier stage. Whatever the actual chronology of derivation, the identity points to the fact that a demonstrative and a plural marker in each language belong to the same grammaticalization chain. This conclusion is further supported by the markers of plurality that are similar to demonstratives within the same language or across related languages, as discussed in the next section.

5.2. *Nonaccidental similarity between plural markers and determiners*

For the postulated Proto-Chadic plural markers in Newman (1990), *-*aki*, *-*n*, *-*i*, and *-*d(i)*, there exist phonologically similar Proto-Chadic demonstratives, as postulated by Schuh (1983): **k*, **n*, **i*, and **d*.⁴ It is important to note that reflexes of the Proto-Chadic demonstratives as described by Schuh occur in all branches of Chadic. In the present section I present data from languages where, rather than complete identity between the plural markers and demonstratives, there obtains a high degree of similarity between the two types of morphemes. I demonstrate, moreover, that this similarity is not accidental but results from the common origin of the two markers. Although in the present state of knowledge one cannot fully account for each specific difference between the demonstratives and the plural markers, there are several attested phonological processes within Chadic that may be responsible for many of the differences. Specifically, the following phonological rules operate across many Chadic languages. First, there is vowel raising and vowel lowering. These rules can be triggered by the vowel of a suffix or by the vowel of the stem. As the result of the lowering rules, high vowels *i* and *u* may become *e* and *o* respectively, and mid vowel *e* may become *a*. As a result of the raising rules, *e* and *o* may become *i* and *u*, and *a* may become *e* (Frajzngier 1981, 1986). Second, by final-vowel deletion a vowel of the stem or of a grammatical morpheme is deleted in phrase-internal position or before an affix. Third, by vowel insertion a schwa or another vowel is added to prevent a disallowed consonant cluster or syllabic structure from occurring. Fourth, rhotacization rules change voiceless alveolar or glottal stops to an alveolar liquid *r*. Fifth, there is consonant devoicing in word-initial position but not intervocally. Sixth, consonants are voiced after a sonorant consonant. As in many other languages, when a lexical item becomes a grammatical morpheme in Chadic it is often phonologically reduced. A description of the plural markers that are similar to demonstratives in various languages from three branches of Chadic follows.

With respect to Hausa (West), Wolf (1995) argues convincingly that a large list of Hausa plurals are cognate with demonstratives.

In Kanakuru (West) two segmental plural markers, *-gin* and *-jin*, appear to contain a frame *n_n* into which some other material is inserted. The interesting fact about these forms is that we can specify what the other material is. I propose that the form *-gin* contains what Newman (1974) calls "zero anaphora marker" *-ki*. The nasal becomes velar before velar consonants, and the voiceless velar becomes voiced in accordance with independently attested phonological rules of Kanakuru, e.g., *a jaŋ-ke* → [a jaŋ-ge] 'the cured you' (Newman 1974: 6). The form *-jin* contains the feminine demonstrative *ji* inserted in the frame *n_n*.

Within the Mandara subgroup (Central) one of the most productive plural markers is *xa*, which in some language descriptions is also represented as *ha*. These are merely two transcriptions of the same marker since there is no difference between velar and glottal continuants in any of the languages of the Mandara subgroup. The 3rd person plural pronouns also have initial consonant *x*-, but their vowels may differ from language to language. Here is a review of the plural forms and the related demonstratives in various Mandara languages.

Glavda has the plural marker *-xa* (Rapp 1968). The plural marker in Lamang is *-xá* (Wolf 1983). There is a corresponding element in the 3rd person plural subject pronoun *xáŋ*. In Xdi, closely related to Lamang, the initial component of the nominal plural marker is *xa*. The consonant *x* is also the distinctive component of the 3rd person plural pronoun, e.g., *xáxən* '3rd plural independent pronoun'. Independent pronouns in Chadic languages are often composite structures (Gouffé 1978). The evidence that *xa* is a 3rd person pronoun is provided by the fact that *-xən* alone is the 3rd plural subject pronoun (Frajzngier & Shay 1996).

The plural marker in Mofu-Gudur is *hay*. In the anaphoric system, i.e., in the system of markers that refer to a previous mention, there are several forms that are phonologically similar, viz. *héyey*, *há*, *hé*, *ha*, *he* (Bartheau 1988).

The plural markers in Podoko have the form *-ki* or *kaki*:

- (25) *nawá* *nawá-ki* 'goat'
dəya *dəya-kaki* 'bird' (Jarvis 1989: 54)

The corresponding element in the anaphoric system is *-ka*:

- (26) *nəɾə* *ká* *maná*
 peanut ANAPH his
 'his peanuts' (mentioned earlier) (Jarvis 1989: 54)

The marker *ka* is also a component of the remote demonstratives, e.g.:

- (27) Proximate Remote
ʔnu-na *ʔnu-ka*
ʔnu-na-nga *ʔnu-ka-nga* (Jarvis 1989: 58)

Adverbs of place and manner are built on the same distinction between *na* for the proximate and *ka* or *ka* for the remote. As in a number of languages from the Central branch, the plural marker must have developed from the demonstrative before the contemporary pronominal system developed.

In Bura, the plural marker *-veri* has a corresponding element in the form of *vi*, which functions as the 3rd person inanimate object, 3rd person indirect object, and clause-final interrogative marker (Heckman 1952). In Frajzyngier (1985b) it is shown that the clause-final interrogative markers are copulas, which in turn in many Chadic and other Afroasiatic languages derive from pronouns (Cohen 1924). The development of the plural markers in Bura must have taken place before the contemporary pronominal system developed, as the contemporary 3rd person plural pronoun has the component *-da*.

The nominal and verbal plural marker in Tera is *-ku*. The language has a number of morphemes, such as a copula and an emphasis marker, that contain *k*, e.g., *ke* 'emphasis marker in relative clauses', *ki* 'contrastive focus marker', copula ('stabilizer' in Newman 1970: 97), *kia* 'emphasis marker' (Newman 1970: 96). In other Chadic languages emphasis markers, copulas, and contrastive focus markers all derive from demonstratives (Pawlak 1994; Frajzyngier 1996a). In Margi, another Central Chadic language, *ku* is a plural demonstrative (Hoffmann 1963). The synchronic picture in Tera indicates that the nominal plural marker and the copula developed from the demonstrative, which is no longer present in the language.

The 3rd person plural component in Mesme (Masa branch) is *-nu* (Fischer 1980), identical with the plural marker in closely related Masa. Recall, however, that in Masa *-na* is also the 3rd person masculine singular marker.

6. Grammaticalization of nominal plural markers

Two aspects of the grammaticalization of the nominal plural markers in Chadic need to be explained. One is structural: one needs to explain how the marker of the noun phrase became the marker of the noun. The other is a semantic or a cognitive motivation for grammaticalization: one must explain how determiners became plural markers of the noun phrase.

I begin with the semantic/cognitive aspect because it is primary and also more difficult to explain.

6.1. Semantic and cognitive motivation

There is no problem in explaining how the 3rd person plural demonstratives became plural markers. Because of its inherent meaning and function, the plural demonstrative when used as a modifier of a noun phrase contributes the meaning of deixis or previous reference marker and also that of number. Over time, and especially during language acquisition, the number feature may be reinterpreted as the sole function of the marker. The existing literature on the grammaticalization of number provides enough examples of this process (Heine & Reh 1984; Lehmann 1982).

A semantic or a cognitive explanation for the grammaticalization of plural when the source appears to be a singular rather than a plural demonstrative is not obvious. It is likely that there were several independent factors contributing to the grammaticalization of singular demonstratives as plural markers. I shall consider here two such factors, with the understanding that additional factors might have been responsible.

One factor has to do with the origin of the plural demonstrative. In all Chadic languages there is only one 3rd person plural pronoun even if in the singular there are two pronouns, one for so-called masculine and the other for so-called feminine gender. Greenberg (1960) observes that in Afroasiatic languages the plural pronoun is similar to the masculine singular pronoun. In Chadic languages the plural forms of demonstratives and pronouns derive in most cases from the masculine singular form, but in some languages from the feminine singular form (Gouffé 1978: 263). Gouffé makes an explicit statement about the derivation of plural forms from singular forms for all persons, not just the 3rd person for Hausa only. A review of other languages clearly shows a similarity between singular and plural pronouns in many Chadic languages. The plural pronouns that do not derive from singular pronouns come from two sources: One is the grammaticalization of other lexical items, such as 'people', a phenomenon encountered in many languages. The other source is borrowing. Thus the 3rd person plural pronouns with the base *m* in the Angas group are claimed to be a part of the substratum (Jungraithmayr 1963 as quoted in Gouffé 1978). Given the fact that most 3rd person plural pronouns derive from the singular through affixation of some marker, one can assume that there was a stage in Proto-Chadic when the 3rd person singular pronoun might have been an unmarked form, which like the unmarked form of the noun, did not indicate any

specific number of the deictic or the discourse referent as singular or plural. An explanation of the similarity between singular demonstratives, plural demonstratives, and plural markers may be sought in a hypothesis that both plural markers and plural demonstratives grammaticalized at the same time from singular demonstratives.

The other explanation, which is not incompatible with the preceding one, has to do with the use of plural forms. The crucial observation in this respect was made by Russell Schuh (personal communication) that in Hausa only determined nouns are marked for plural. Similarly in Basque, only determined nouns can be marked for plural.⁵

I propose to extend this observation as a condition for the grammaticalization of nominal (and verbal) plural in Chadic languages, that coding of plurality was deployed only with determined arguments. The term 'determined' includes but is not limited to the following semantic characteristics: the noun or the noun phrase has been previously mentioned in discourse; the noun or the noun phrase is marked by a deictic marker encoding the distance from the speaker or the hearer or both (cf. Jaggar & Bubba 1994); the noun is the head of a possessive construction with a definite possessor; and the noun is inherently definite, such as the proper name of an individual or a group, a specific kinship term, and possibly other narrowings of the scope of reference. The proposed hypothesis about the grammaticalization of nominal plural markers is as follows. A demonstrative, as defined earlier in the present paper, was added to the noun phrase (not to the noun, unless it was the only element of the noun phrase) in order to isolate a referent or a group of referents from some other potential referents. The primary function of the demonstrative was thus not to mark the number but rather to mark the previous mention or distance deixis. Evidence for the primary determiner function of the demonstrative is provided by the fact that in contemporary languages even inherently plural nouns may have the plural demonstrative added if the referent was mentioned earlier in the discourse. The following sentence occurred in a narrative. It was preceded by a sentence in which the subject, 'people of Mupun', was mentioned:

- (28) *nen mupun mo kat mo yo kwai lasim*
 people Mupun PL when 3PL go hunt leopard
 'People of Mupun, when they go to hunt for a leopard ...'
 (Frajzyngier 1993: 509)

In the following sentence the speaker uses the plural marker *mo* with the inherently plural noun *surep* 'women'. But the speaker does not refer to just any women, but to his family members:

- (29) *ne nu yaa saar n-surep mo*
 COMP 1PL hold hand PREP-women PL
 'so that we restrain our hands for the women' (i.e., we leave some food for the women)

The information about plurality of the determined arguments might have been provided by the plural form of the verb coded through gemination and/or reduplication. Such plural forms are retained in Chadic from Afroasiatic (Frajzyngier 1979). When the plural verbal form occurred with a determined noun phrase, both of these means could have been considered as encoding the plurality of an argument. The grammatical change might have come as in the speech of adults only one of the means was used, through metonymy, whereby a part of the sign was used for the whole sign. The whole sign in this case is a combination of the plural coding on the verb and the determiner on the noun. A part of the sign is either of these two components used separately. This process might have been reinforced in language acquisition: A child, when confronted by two forms that occur together when the noun phrase has a plural interpretation, may reanalyze any of the two forms as a sole marker of the plurality.

6.2. Syntactic and morphological reanalysis?

The present section will address the variable constituency of the plural marker. Lehmann (1982: 60) offers the following explanation for the change from the plural marker as a feature of the noun phrase to an affix:

A noun of multitude, personal pronoun or quantifier used as a number marker occurs only once in each NP, normally at its margin. It is a feature of the NP as a whole. With ongoing grammaticalization it may be repeated on the head noun if this does not already carry the marker. This leads to number agreement ...

The crucial question that Lehmann did not ask or answer is the following: Why would the plural markers be repeated inside the noun phrase? An analysis of data in Chadic can explain the change explicitly; this explanation may also be applicable to other languages.

Plural markers in many Chadic languages occur at the margin of the noun phrase, typically at its end and occasionally at its beginning. Consequently when the noun is modified by a property concept word, possessive marker, or definite marker (but interestingly not by a quantifier, which often follows a plural marker), the plural marker follows the modifier. In Daba (Central) the plural marker *gi* can be the final element of the noun phrase if the head noun is modified:

- (30) *tá wá ká wála ngwani dá gi*
 1SG go to call friend 1SG PL
 'I will call my friends.'

(Ruth Lienhard and Martha Giger, personal communication)

If the noun phrase consists only of a head noun, the determiner follows the noun directly and may become phonologically linked to a noun, i.e. a suffix. The fact that the plural marker becomes phonologically a suffix does not mean that it has become an inflectional marker. The crucial requirement of an inflectional marker, viz. its compulsory use, does not follow from the fact that the marker is a suffix.

The explanation of the various distributions of the plural marker can be sought in language acquisition. A child acquiring the language encounters the same marker occurring in a number of positions within the noun phrase. The child may therefore reanalyze the marker as a characteristic of the head noun and of various modifiers as well as a characteristic of the noun phrase. In such a case the plural marker may occur once, twice, or more times in the noun phrase. In Mina (Central) the plural marker is *íi*. It can be added either to the head noun or to the end of the noun phrase (own fieldnotes):

- (31) a. *gidwiri-íi tá táng*
 pot-PL GEN 3PL
 'their pots'
 b. *gidwiri tá táng-íi*
 pot GEN 3PL-PL
 'their pots'
- (32) *gidwiri tá táng*
 pot GEN 3PL
 'their pot'

The addition of the plural marker to the head noun in Mina is, however, dispreferred. In possessive forms other than the 3rd person plural, the plural marker can be added only to the end of the noun phrase:

- (33) *gidwiri tá ní-i*
 pot GEN 1PL.EXCL-PL
 'our pots'
- (34) *gidwiri tá ní*
 pot GEN 1PL.EXCL
 'our pot'
- (35) *gidwiri tá ki-i*
 pot GEN 2SG-PL
 'your pots'

- (36) *gidwiri tá ki*
 pot GEN 2SG
 'your pot'

In Moñu-Gudur (Central) the plural marker *hay* can follow nouns, e.g. *áhwam* 'mouse', pl. *áhwam hay*, or modifiers within noun phrases; both instances are illustrated in the following example:

- (37) *hay hay mahurá maráw hay tábiyá*
 chief PL great old PL all
 'all the great and old chiefs' (Barreteau 1988: 58–59)

Virtually the same situation obtains in Gisiga, where the plural morpheme *hay* may occur after a noun or a noun phrase. Lukas (1970: 18) calls *hay* a postposition rather than a suffix.

The same conditions regarding the marking of the head noun or the noun phrase obtain even if the plural markers precede the constituent they modify. The nominal plural marker in Zulgo is *gá*, phonologically cognate with plural pronouns, demonstratives, and nominal plural markers in other languages of the Mafa subgroup. But unlike in other Chadic languages, *ga* as a plural marker precedes the noun or the noun phrase it modifies (data after Haller 1989):

- (38) Singular Plural
ákw *gá ákw* 'thing'
menzikwir *gá menzikwir* 'chicken'
ná *gá ná* 'the one' (anaphoric)
nahá *gá nahá* 'this' (proximate)

The plural marker may occur more than once within a noun phrase:

- (39) *gá bába gá menzikwir*
 PL large PL chicken
 'large chickens' (Haller 1989: 10)

Moreover, *gá* may occur as a marker of noun phrase conjuncts forming a single noun phrase:

- (40) *nahá bazlam máda á mérsékele gá awák ndá gá ténang ndá*
 DEM word go PREP trade PL goat CONJ PL sheep CONJ
gá kara
 PL dog
 'Here is a story of a trade that a goat, a sheep, and a dog wanted to make.'

- (41) *i* *pat dlawá* *gá awk ndá* *gá tamag ndá* *gá kara tá*
 prep day certain PL goat CONJ PL sheep CONJ PL dog 3PL
gwááhu
 say.3PL
 'one day, the goat, the sheep, and the dog said to each other'
 (Haller 1989: 31)

Languages in which the marker is added to the noun phrase include Mupun and other languages from the Angas group of West Chad, and a number of languages in Central Chad, including Mina, Zulgo, Mofu-Gudur, and Gisiga. The categorial change from the marker of the noun phrase into the marker of the noun can be explained by the fact that in the process of language acquisition children are faced with several types of constructions, NP-PL, N-PL, DEF-PL. In such a situation the child has several choices in determining the categorial status of the plural marker. In some languages the choice was uniquely for the NP-PL (e.g. Mupun, Margi), and in other languages the choice was for the N-PL, i.e. in those languages in which the plural suffix is added to nouns only. As would be expected, there are also languages, such as Mina, in which both choices were exercised.

7. Grammaticalization of segmental verbal plural markers

In addition to gemination and reduplication, many Chadic languages encode verbal plurality through segmental markers. Newman (1990) postulates the existence of two types of plurality, one that he labels "pluractionals", which encode multiple events (with singular or plural subjects), and the other that he calls "plural" verbs, which encode agreement with the plural subject regardless of the semantic role of the subject. The proposed division is thus functional, but Newman also states that the formal means of encoding the two types of plurality are different. Moreover, he claims that the markers *i* and *n* do not occur in the coding of multiple events (1990: 86-87). And he does not include the marker *i* as the marker of agreement with subject. The problem with this division is that, contrary to Newman's claim, the markers *-Vn* and *-i* can occur as markers of multiple events, and the marker *-i* can also occur as the marker of plural subject. Hence the markers of supposedly two different categories can be the same. Given these facts, I propose and will demonstrate that the two types of verbal plurality are actually different grammaticalizations from the same source. I will also offer an explanation of how each type emerged. Henceforth I will refer to both types as verbal plurals. Moreover, these markers are cognates or identical with the markers that across the Chadic language family encode plurality of noun phrase or

noun. The markers of nominal plurality were shown in the preceding section to derive from members of the demonstrative grammaticalization chain. By showing that the segmental verbal plurals derive from demonstratives, I will have explained why the verbal and nominal plural markers in Chadic are similar.

The discussion of grammaticalization of verbal plurals is divided into three parts: First, evidence is presented that the verbal plural markers are cognate with the demonstratives (this part also includes evidence that the same markers are used for so-called plural agreement markers and multiple events coding); then an explanation is given of the structural conditions of grammaticalization of verbal plurals; and finally an explanation is given of the semantic or cognitive motivation for the grammaticalization. The manner in which the semantic functions related to plurality are encoded in the process of grammaticalization is consistent with other functions in which the verb is the locus of coding of the types of arguments in the clause, their semantic roles, and their number.

7.1. The relationship between verbal plural markers and demonstratives

Newman (1990) reconstructs for Proto-Chadic the following segmental markers of pluractional verbs: **-tV* 'iterative stem' and 'internal *a*'. He is not sure about the reconstruction of **-d/(i)* and **-ai* and states that gemination and the vowel *i* are not used as markers of verbal plurality. The marker **n* is reconstructed only as the marker of the plural verbs, i.e., a marker agreeing with the plural subject of transitive and intransitive verbs. Newman's statement that **i* does not occur as a marker of verbal plural is factually incorrect, as there are several languages in which the vowel *i* codes verbal plurality, including both plurality of event and plurality of subject, albeit not in the same languages. Similarly, the statement that **n* codes plurality of subject is also factually incorrect, as there are languages, such as Xdi, in which **n* codes plurality of the object, and Gidar, where it codes plurality of event. The importance of the first fact is that the marker that codes nominal plurality also codes verbal plurality. The second fact points to a continuum of plural marking on the verb rather than to two discrete types. I discuss the marker *n* later in the present section. An illustration of the marker *i* coding verbal plurality in two Central Chadic languages follows.

Musgu (Central) has the verbal plural marker *-i* (whether *-a* in the singular form is a morpheme or a part of the verbal stem is not clear):

- (42) Singular Plural
d-a *d-i* 'cook'
m-a *m-i* 'wash'
fad-a *fad-i* 'die'
- (Meyer-Bahlburg 1972: 113)

One of the nominal plural markers in Gidar is the suffix *-i*, e.g., *gléw* pl. *gléw-i* 'goat'. The same marker is used as the verbal object anaphor.⁶ The transcription is phonetic in order to show results of vowel raising to the left and right of the infix *i*. The stem vowel *a* of the verb and the 3rd person subject prefix *a* become [e] when followed by a high front vowel. Similarly the vowel *a* of the perfective suffix also becomes [e]:

- (43) *é-gréék-i-kéé*
3M-finish-3PL-PERF
'He finished them.'
- (44) *á-gráák-á-ká*
3M-finish-3M-PERF
'He finished it.'

The vowel *i* on the verb is the marker of the plurality of the definite objects that follow the verb in the clause. The vowel of the verb stem becomes [e]. The epenthetic vowels on the subject and definite marker of the object are also *i*:

- (45) *é-bey-ní-ník* *kr-dé ná vóndu*
3M-kill.PL-PL-PERF dog-PL GEN Vondu
'They killed the dogs of Vondu.'

Recall that Gidar has the 3rd person singular subject marker *i* in the progressive. The verbal plural is therefore related to the third person singular subject. The data from Gidar indicate that the nominal and verbal plural markers developed from the same source.

7.2. Sequences of grammaticalization

The linear notion of a grammaticalization chain is too constrained to account for multiple similarities across grammatical categories. Whereas some grammaticalizations have the form of a chain where $a \rightarrow b \rightarrow c$, others have a form of bifurcation where *a* serves as an immediate source for *b* and *c*, as envisaged in Heine (1992: 354–358). The proposed sequences of grammaticalization of verbal plural include linear chains, bifurcations, and more than two grammatical morphemes being the product of one source. The grammaticalization of the verbal plural in Chadic thus resembles weblike structures with the centers (sources) consisting of a member of the chain of demonstratives. Within each web the minimal structure consists of two elements, a source and a product, with the product being the final element of the chain. But there may also be longer structures where the product serves as a source of another grammatical

morpheme. I postulate that there were the following chains of grammaticalization involving verbal plural in Chadic:

- (i) demonstrative → object anaphor → plural object
- (ii) demonstrative → object anaphor → cataphoric marker of determined object → plural object
- (iii) demonstrative → object anaphor → cataphoric marker of determined object → marker coding definiteness of the object → plural object
- (iv) demonstrative → object anaphor → plural subject of the intransitive verb
- (v) demonstrative → object anaphor → plural subject of transitive
- (vi) demonstrative → object anaphor → plural subject of transitive → plurality of event

One could combine several chains into a longer chain, but that would imply that all intermediary stages would have to be met in order for the subsequent stage to occur, a situation for which there is no evidence. Nevertheless certain stages precede some other stages. Thus coding of the object anaphora is the first stage for all chains of grammaticalization of segmental number. Coding of the plural of the subject of the intransitive verb precedes the coding of the plural of the subject of the transitive verb. This relative chronology explains why plural verbs in most Chadic languages have an ergative basis, viz., the scope of the plural is either the definite object of transitive verbs or the subject of intransitive verbs, but not the agent of transitive verbs. This situation has many parallels in other languages such as Lahu, Twi, Navaho, and Luiséño (cf. Moravcsik 1978 and references there) and Polish, Caucasian, Chukotko-Kamchatakan, and Australian languages (cf. Frajzyngier 1985a and references there). The explanation of the facts in Chadic may shed light on the emergence of ergative coding of plurality in other languages.

The argumentation for the proposed theory consists in showing the existence of a given stage in some language(s). This is not the proof of the theory, but it shows that each of the stages is possible in Chadic.

7.2.1. Deictic markers become markers of verbal plurality

The purpose of the present section is to demonstrate that deictic markers have indeed become markers of verbal plurality in some languages. The easiest demonstration of the stage in which deictic markers become markers of verbal plurality is with languages in which the plural marker on the verb is identical with the plural marker on the noun; this plural marker has been shown earlier in this paper to derive from a demonstrative.

Mandara has the nominal plural marker *-ha* [xa], which can follow the head noun, the noun phrase, or both (all data from my own fieldnotes):

- (46) *shilá-há lapiká-(há)*
 cow-PL sick-(PL)
 'sick cows'
 (47) *shilá lapiká*
 cow sick
 'a sick cow'

The following examples show that the marker *ha* codes plurality of the object on the verb (*ha* reduced to *h* in phrase-internal position):

- (48) a. *á-céé-h náǰá-há*
 3-cut-PL tree-PL
 'He will cut trees.'
 b. *cáá náǰá*
 cut tree
 'He cut a tree.'
 (49) a. *cá-há-rá-cá-hí náǰá-há báámmé*
 cut-PL-3PL-cut-PL tree-PL all
 'They cut all trees.'
 b. *cá-r-cáǎ náǰ náǰá*
 cut-3PL-cut DEM tree
 'They cut this tree.'

The most likely explanation for the formal syncretism between the nominal and the plural marker in Mandara is that a plural demonstrative marker became the plural marker in the nominal system and the object plurality marker in the verbal system. Although Mandara did not retain the demonstrative that served as the source for plural markers, other closely related languages, Lamang and Xdi, did. The addition to the verb of the deictic marker identical with the nominal marker is also a characteristic of Mafa (Central) and Mupun (West). The evidence that the first stage is the addition of the markers to transitive verbs is provided by the fact that in these languages only transitive verbs have plural markers. Thus in Mafa the nominal plural marker is *háy*, which according to Barreteau & Je Bléis (1990: 172) can be "postposé aux formes transitives".⁷

As stated earlier, anaphor as used in the present paper is defined as a marker recalling a previously mentioned noun phrase. The notion of the recall of a previous mention rather than deixis explains why singular as well as plural forms of anaphors are used. As argued in Frajzyngier

(1991), reference to elements mentioned in speech has fewer categorial distinctions than reference to deictic elements. Thus if a language has a distinction for gender in deictic reference, it may lack this distinction in anaphoric reference. Similarly, if a language has a distinction for number in deixis, it may lack such a distinction in anaphoric reference. Here is an example of the lack of distinction of number in anaphor. In Mupun there is a plural marker *mo*. There is also a definite marker *no* identical with the third person singular object pronoun. When reference is made to a plural object noun phrase mentioned before in discourse, the definite *no* is used rather than the plural *mo* (antecedent and anaphor in roman):

- (50) *sem bature mo an mbá tu na n-baa*
 name European (H.) PL 1SG FUT kill ANAPH 1SG-throw.away
ká na
 PREP ANAPH
 'European names, I would eliminate them, throw them away.'
 (Frajzyngier 1993: 94)

In the process of elicitation it turned out that one could also use the plural form *mo* as an anaphor:

- (51) *sem bature mo an mbá tu mo*
 name European (H.) PL 1SG FUT kill 3PL
 'European names, I would eliminate them.'
 (Frajzyngier 1993: 94)

But in natural discourse, the singular rather than the plural form is used. Presence of the singular anaphors in the function of plural object markers in other Chadic languages can also be explained by this process. One form, undifferentiated for number and gender, is used as the previous reference marker regardless of the number and gender of the antecedent.

7.2.2. *From anaphor to cataphoric marker of a determined object*

The grammaticalization of the cataphoric marker of a determined object preceded the grammaticalization of plural coding on the verb in some languages. In addition to the coding of previous reference, the marker also encodes the presence of a determined object in the clause, be it inherently specific, such as proper names or kinship terms, or an object determined by a demonstrative. This is quite natural an extension, given the fact that previous reference implies specificity. A child acquiring a language may easily reinterpret a previous reference marker as a marker of a specific noun as just defined. Gidar provides an excellent illustration of grammaticalization of a cataphor of a determined object. In the system of reference the language has a two-gender distinction in the

singular. The plural form is undifferentiated for gender. Previous reference to a masculine noun is marked by *mə* or *ə*, previous reference to a feminine noun is marked by the suffix *ɪ*, and reference to a plural noun is marked by the suffix *-i* (data from my own fieldnotes):

- (52) *kə-ɔ́m-n-ə-n-ká*
2-eat-3M-PL-PERF
'You (PL) ate it (masculine object, about which one has talked).'
(53) *á-ɔ́m-ɪ-ə-n-ká*
3-eat-3F-PL-PERF
'They ate it (feminine object, e.g., small amount of food).'
(54) *á-ɔ́m-n-ɪ-n-ké*
3-eat-3M-3PL-PL-PERF
'They ate them.'

The previous reference marker becomes the marker of definite object, even if the object has not been mentioned before but rather follows the verb, e.g., the definite plural object:

- (55) *é-béy kékém-dé wə-tí*
IMPER-KILL.PL mouse-PL DEF-PL
'Kill all the mice.'

Compare with an indefinite plural object:

- (56) *á-báy kékém-dé*
IMPER-KILL mouse-PL
'Kill mice.'

If the object is inherently definite, such as a proper name, the anaphor (except, the masculine, which is unmarked) must be used on the verb. The feminine definite object is marked by the suffix *-ɪ*:

- (57) *wá ngħwə-ɪ kə-á*
3.FUT love-3F Kiza
'He should love Kiza.'

The plural specific object is marked by the suffix *ɪ*:

- (58) *wá ngħɪ-ɪ kəzá gəm tizi*
3.FUT love-3PL Kiza CONJ Tizi
'He should love Kiza and Tizi.'

The data in Gidar illustrate the fact that demonstratives or pronouns are added to verbs to code the presence of the definite object. In other Chadic languages the verb has a plural marker only when the object is

definite, e.g., in Hona (Central) and East Dangla (East), as illustrated below:

- (59) *gá ɪy-gu gam ku bəɪ-ny-dyi ku(ku)*
3M bring-3PL thing REL give-2SG-3M DEM
'He brought the things that you gave him.'

Compare again with singular indefinite object:

- (60) *gá ɪy bəɪka min sugine*
3PL bring cow PREP market
'They brought a cow from the market.'

(East Dangla; Erin Shay, personal communication)

These examples illustrate the fact that a demonstrative marker on the verb may become a marker of plurality of the nominal object, which is otherwise unmarked for number. The grammaticalization of the cataphoric markers of determined objects provides support for the connection between definiteness and plurality in the sense that the marker of plurality of the object on the verb occurs only when the object is definite.

7.2.3. Marking the definiteness of the object

From the cataphoric marker of a definite object, the marker on the verb becomes the primary marker of the definiteness of the object, i.e., it is used as the sole marker of the definiteness of the object. This is illustrated by Gidar (own fieldnotes):

- (61) a. *nə-wúl-é-k kr-dé ná wónđu*
1SG-see-3PL-PERF dog-PL GEN Vondu
'I have seen the dogs of Vondu.' (dogs mentioned earlier; the plural anaphor *i* becomes *-e* as per phonological rules of the language)
b. *nə-wúl-ək kr-dé ná wónđu*
1SG-see-PERF dog-PL GEN Vondu
'I have seen dogs of Vondu.'
(62) a. *á-nzéd-ɪ-k wáħħi-dé ná mályá*
3M-cure-PL-PERF cow-PL GEN chief
'He cured the cows of the chief.'
b. *á-nzəd-ək wáħħi ná mályá*
3M-cure-PERF cow GEN chief
'He cured a cow of the chief.' (*wáħħi* 'cow' is masculine in Gidar)

7.2.4. *Grammaticalization of the additional argument marker*

The term "additional argument" designates an argument other than subject or object. The grammaticalization of the additional argument marker (glossed as ADD) is an independent process that has contributed to the presence of a singular demonstrative on the verb, coding the presence of the plural object. These markers are added to the verb to encode that in addition to the arguments that a verb takes in its unmarked form, there is one more argument present in the clause (Frajzyngier 1985c). The additional argument marker is most often identical with the 3rd person singular pronoun, and if a language has a gender distinction, it is the 3rd person masculine pronoun that has been grammaticalized in that role. The importance of the grammaticalization of additional argument marking for the coding of plurality is that in some clauses when there is a 3rd person plural argument, the presence of such an argument is signaled by the singular marker on the verb. I shall illustrate the role of such a marker in Xdi (Central). If the verb is inherently intransitive, the presence of an object in addition to the subject of the clause is marked by the 3rd person singular pronoun *ná* suffixed to the verb. This can be illustrated on the verb *djǎ́* 'hide oneself'. In the absence of an object, the verb means that the subject is hiding:

- (63) *ká djǎ́-n-tá-tsí*
 SEQ hide-ARF-PERF-3SG
 'and consequently he hid himself'
 (SEQ = sequential marker, ARF = affected subject extension)

The marker *ná* is required if an additional argument is added, whether animate or inanimate, nominal or pronominal:

- (64) *ká djǎ́-ná-tá-tsí tá wázák*
 SEQ hide-ADD-PERF-3SG OBJ rooster
 'and consequently he hid the rooster'

The evidence that *ná* is the third person singular marker is provided by contrasting it with object markers for other persons:

- (65) *pá-ixá-yá-ná-pdá tá yrbú*
 leave-1SG/2SG/3SG-leave OBJ pigeon
 'He left me/you/him a pigeon.'
 (66) *wá-ná-wá tá kóbú*
 give-1PL.INCL-give OBJ money
 'He gave us money.'

But the 3rd person plural object cannot be coded by a suffix to the verb. Instead it is coded as a prepositional phrase marked by the object-

marking preposition *tá*. When the dative/benefactive marker is 3rd person plural, however, the verb has an additional argument marker, which is identical with the 3rd person singular:

- (67) *pdá-ná-pdá tá xán tá dǎ́yá*
 leave-3SG-leave OBJ 3PL OBJ food
 'He left them food.'
 (68) *skwá-ná á tǔpá tá há tá xán wá*
 buy-2SG NEG 1SG OBJ cow OBJ 3PL NEG
 'I did not buy cow for them.'

Thus the data from Xdi show that a marker containing an alveolar nasal, identical with the 3rd person singular pronoun, can serve as a marker indicating the presence of the 3rd person plural dative and direct object.

7.2.5. *Coding of the number of the intransitive verb*

The term "intransitive plural" refers to the stem that encodes a type of plurality. This form is different from the 3rd person plural subject, as illustrated by the following data from Daba. The third person plural subject marker in Daba has a number of forms based on the initial consonant *l* (Mouchet 1967: 87) as well as zero in perfective, *á* in imperfective, *á* "emphatic", and *maíá* in imperative. In addition to the 3rd person plural subject marker, the verb may have the plural suffix *-gi*, as in the following example:

- (69) a. *ján á wá ká-yáht-gi*
 find 3 will come-have-PL
 'They should come.'
 b. *ján á wá ká-yáht*
 find 3 will come-have
 'He should come.'

The same marker codes plurality of words describing property concepts:

- (70) a. *jík maíá ndán tá gbán gbán gi*
 house REL built they strong strong PL
 'Houses that they built are strong.'
 b. *jík maíá ndán tá gbán gbán*
 house REL built they strong strong
 'House that they built is strong.'

The interest of the marker *-gi* in Daba lies in the fact that it is also the nominal plural marker, e.g. *páy* 'tree', pl. *páy-gi*.

The explanation of the grammaticalization of the plural of the intransitive verb is not trivial, especially if, as postulated, the source of the plural marker is the marker of the object of transitive verb. One process that might have facilitated this grammaticalization is metaphorical. The prototypical object of a transitive verb is affected. At first the object markers were used with those intransitive verbs whose subjects were affected, e.g., verbs of movement, and perhaps also labile verbs, such as 'burn', 'spoil', 'cook', etc., i.e., verbs that may occur with only one argument, which must be affected rather than controlling. The grammaticalization consisted in the extension of the notion affected from the object to the other argument. In order to check the validity of this hypothesis, let us examine the plural intransitive verbs in several languages.

In Pero the following intransitive verbs have been recorded with plural forms: 'descent', 'come', 'wash' (intransitive in Pero), 'run, escape', 'scatter' (no singular form of this verb has been recorded), 'climb', 'fall down'. In all of these verbs the subject changes position or is otherwise affected by the action of the verb (Frajzyngier 1989).

In Mupun the following intransitive verbs have the singular-plural distinction: 'die', 'run away', 'go out', 'be lost', and 'fall down'. All are verbs whose subjects are affected (Frajzyngier 1993).

In Gidar (Central) there is a special plural form of intransitive verbs formed with a round vowel *u* or *o*. The verbs that have such plural forms are 'return', 'come', 'go', 'stay/live':

- (71) a. *â-mâ-ô-ŋ-kô*
3M-return-PL-3PL-PERF
'They returned.'
b. *â-mâ-ŋ-kâ*
3M-return-3M-PERF
'He returned.'
- (72) a. *â-nz-ô-ŋ-kô*
3-run-PL-PERF
'They ran.'
b. *â-nz-â-ŋ-kâ*
3M-run-3M-PERF
'He ran.'

(own fieldnotes)

In Lele (East) the plural form of the verb is coded by devoicing of the initial consonant of the verb or by the suffix *wi*, very likely related to round vowel markers of plurality widespread throughout the grammatical categories in all branches of Chadic. The number of verbs in Lele in which the singular-plural distinction is encoded is very small. The intransitive verbs for which singular-plural distinction, realized by various

means including suppletive stems, was recorded are *gir* 'run SG' and *kɔ̃wɔ̃* 'run PL', and *â-wî* 'scream, holler', *câl-wî* 'jump'. The verb 'scream, holler' encodes plurality of the event. The other two verbs encode the affectedness of the subject (own fieldnotes). Thus the first motivation for grammaticalization of the subject of intransitive verbs is a change from the affected object to just the affected argument.

7.2.6. From object marker to plurality of event

Wolf (1977) was the first to associate in Chadic the use of the plural forms of verbs in the coding of imperfective aspect and other forms where the event was not punctual. But there were no studies aiming to explain the grammaticalization of segmental markers into the markers of multiple events. I propose that a demonstrative has been grammaticalized into the marking of an event occurring many times. Thus coding of the plurality of event by segmental markers rather than by reduplication or gemination is a later rather than an earlier stage in the grammaticalization. Evidence for the hypothesis consists of showing that the markers of plurality of event are cognate with demonstratives, which may be plural or singular.

Recall that in Gidar there is a 3rd person definite object marker *n*. The language also has a marker of repetition of action, event (glossed here as RE):

- (73) a. *nâ-pârm-tâ-k* *dâ rgâ-n* *hâyâ*
1SG-hear-3F-PERF IMPF pound-RE corn
'I heard her re-pound the corn.'
b. *nâ-pârm-tâ-k* *dâ rgâ* *hâyâ*
3SG-hear-3F-PERF IMPF pound corn
'I heard her pound corn.'
- (74) a. *nâ-pârm-î-k* *dâ rkâ-n* *glâ*
1SG-hear-3PL-PERF IMPF build-RE house
'I heard them rebuild the house.'
b. *nâ-pârm-î-k* *dâ rkâ* *glâ*
1SG-hear-3PL-PERF IMPF build house
'I heard them build a house.'

If one considers this similarity not accidental, then the most likely hypothesis is that Gidar has grammaticalized a marker of repeated action from the 3rd person definite object marker.

In some languages further grammaticalization includes habitual, progressive, and other imperfective aspects. The crucial element in the hypothesis here is that the coding of many objects precedes the coding of the imperfective aspect in the grammaticalization chain.

The imperfective aspect in Mafa is marked by the suffix *-y*, which may be analyzed as a realization of *i* after the vowel *a* (Barreteau & le Bleis 1990: 37):

- (75) Stem Imperfective 'It is edible.'
ndá 'eat' *á ndáy* 'One divides it.'
ká=la 'divide' *á ká=lay*

Several demonstratives have apparently free variants ending in the palatal glide (Barreteau & le Bleis 1990: 52):

- (76) Pronouns Modifiers
nunu or *nanay* 'ceci, ce ... ci' *wuna wunay*
nata or *natay* 'celà (là bas)' *sáta sátay*
wutu *wutay*

With respect to the two nominal plural markers in languages referred to as 'Kotoko', the marker *-ay* has a corresponding plural form in the verbal system, viz. the habitual marker *-y*, which Tourneux (1995) considers to be a plural marker:

- (77) a. *dà sán* 'He spends the night.'
 b. *dà sánáy* 'He spends the night habitually.' (Tourneux 1995: 174)

The question that one would like to answer is what was the process by which a demonstrative became the marker of the plurality of the event. I propose that the preceding stage in the grammaticalization was the coding of the plural object. Recall that in Gidar the marker of repetitive action is identical with the marker of the 3rd person definite object. The function of the plural object marker can thus be extended into the coding of plurality of event.

7.2.7. Coding the plural number of the subject

The coding of the number of subject by means other than pronouns, regardless of the subject's semantic role, is a relatively rare phenomenon in Chadic languages (Schuh 1978; Frajzyngier 1980). Newman (1990) postulates that the coding of the plurality of subject is a separate type, which he calls 'plural verbs', and he lists only languages from the Bole-Tangale group in the West; Gisiga, Mofu-Gudur, Mandara, and Musgu in the Central branch; and Kera, Bidiya, and Sokoro in the East.

There are two types of plural coding of the subject. In some languages, e.g. in Kirfi, Gera, and Geruma, of the Bole-Tangale group in the West

branch, the verb has the plural form of the stem whenever the subject pronoun is plural.

- (78) a. *sú bád-í-mí*
 3PL fall-PL-PERF
 'They fell.'
 b. *sí bád-mí*
 3SG fall-PERF
 'He fell.'
 (Gera; Schuh 1978: 98-99)

I propose that the coding of the number of the subject by means other than subject pronouns represents another grammaticalization in the demonstrative grammaticalization chain. Evidence for this hypothesis consists of the fact that every marker of verbal subject plurality has a cognate form within the set of demonstratives, either as reconstructed for Proto-Chadic or within the same language. Going from West to East we have the following cognates.

In Bete the underlying form of the verbal plural suffix is *an*, which in combination with perfective marker *kó* is realized as *ánpó* (Schuh 1978: 20). The alveolar nasal is also the distinguishing feature of the 3rd person masculine singular object complex:

- (79) *máahá baahánpó*
 3PL shoot.PL.PERF
 'They shot.'
 (Schuh 1978: 21)
- (80) *hí baahínánpí*
 3SG shoot.3SG.PERF
 'He shot him.'
- (81) *hí baahítánpó*
 3SG shoot.3F.PERF
 'He shot her.'
 (Schuh 1978: 23)

In Kirfi the plural marker on the verb is the suffix *n*, cognate with the reconstructed Proto-Chadic demonstrative **n*. But most important, it is cognate with the 3rd person masculine singular indirect object *ne* in closely related Geruma (Schuh 1978: 40).

In Gera the marker of plurality is the vowel *i*, cognate with the demonstrative **i* reconstructed by Schuh for Proto-Chadic. Closely related Geruma provides comparative evidence for the plural marker *i* in Gera being cognate with the third person singular object pronoun. In Geruma the marker *i* precedes the marker *ŋ* whenever the object is singular.

In Geruma the plural suffix is *-áŋ-* or *-áŋŋ-*, depending on the syllabic structure of the root (Schuh 1978: 126). The velar nasal is probably a

result of a phonological rule operating in morpheme-final position. The plural marker in Geruma is not only cognate with the demonstrative **n* but is also very close to the 3rd person singular masculine object *ŋ* (for the data cf. Schuh 1978: 128).

In Gidar the 2nd and 3rd person plural are coded through non-contiguous morphemes; the morpheme that precedes the verb encodes the person and the morpheme that follows the verb encodes the plural number, as shown in Table 3 of subject pronouns (own fieldnotes).

There is no gender distinction in plural, and the same form serves as plural marker for masculine and feminine nouns:

- (82) a. *wá-rg-á-kámá-ní*
FUT-hit-2PL-PL
'They will hit you (PL).'
b. *wá-ká-rg-á-ná-ní*
FUT-2-hit-3-3M-PL
'You (PL) will hit him.'
(83) *múnjúkán táí hí-l-wá-ní*
2PL IMPF see-1SG-PL
'You (PL) see me.'

The importance of the plural marker *ní* lies in the fact that it is identical with the 3rd person singular definite object marker, as illustrated by the following sentence:

- (84) *ní-á-lá-ní*
1SG-see-3M
'I see him.'

In phrase-internal position, morpheme-final vowels are deleted and both markers become *n*, with a schwa inserted to prevent disallowed syllabic structures from occurring (see (85) and (86)).

Table 3. *Pronominal subjects in Gidar*

Person	Singular	Plural
1st	<i>ná</i>	<i>ná</i>
2nd	<i>ká</i>	<i>ká... níán</i>
3rd masculine	<i>á</i>	<i>á... níán</i>
3rd feminine	<i>tá</i>	
3rd (dependent clause)	<i>dá</i>	<i>dá... níán</i>

- (85) *ká yíldá-n-ká*
2 mistake-PL-PERF
'You are mistaken.'
(86) *ká yíldá-ná-n-ká*
2 mistake-3-PL-PERF
'You have misled him.'

In Munjuk (Central) the marker *i* encodes the plural number of the 2nd and 3rd person subject:

- (87) a. *é mí-l-i*
3PL take many things-PL
'They took many things.'
b. *á má-l-á*
3SG take many things-SG
'He took many things.'

(Tournoux 1993)

The marker of plurality *i* is cognate with the proposed reconstruction of the demonstrative **i*. The marker *i* in Munjuk is a marker of plurality used across lexical categories. It appears that the 3rd person plural subject pronoun *e* is a result of the fusion of two markers: *a*, the marker of the 3rd person, and *i*, the marker of plural number. The comparative evidence regarding the nature of the subject plural marker *i* in Munjuk is provided by the fact that in Gidar the plurality of definite object on the verb is coded by the suffix *-i*.

8. The sources of the stem-internal markers

There are at least two markers of plurality, which unlike other markers appear to be inserted between the first and the second consonant of the verbal stem. One of these markers is the infix *a*. Greenberg (1955) postulates the existence of nominal "internal *a*-plurals" in Afroasiatic, i.e., formation of plurals through intercalation of the vowel in the nominal stem. This hypothesis has been accepted by many scholars. In Frajzyngier (1977) it is shown, however, that the marker *a* occurs in Chadic more frequently as the marker of verbal rather than of nominal plurality. Similarly Newman (1990) does not reconstruct *a* as the marker of nominal plurality in Chadic.

There have so far been no hypotheses about the source of grammaticalization of this vowel as a plural marker. There are three possibilities. One is that the vowel *a* might have been a part of the underlying form of the verb, which through some changes and in contrast with other vowels has acquired a plural meaning. Another hypothesis is that it is an infix with a source outside of the verbal stem. The third possibility is that it is a

result of a lowering of the internal vowel caused by a suffix *a*, which was lost over the time, leaving only a stem-internal trace of its presence.

There is some evidence against the first and third hypotheses. Consider the formation of internal *a* plurals in Mupun (West) (Frajzyngier 1993: 56):

(88)	Singular		Plural	
	<i>pim</i>	'crack'	<i>piān</i> [pyān]	'crack many'
	?		<i>byān</i>	'say many things'
	<i>pūt</i>	'go out'	<i>piāt</i> [pwāt]	'go out'

These forms could not have been derived through a change of function of the underlying vowel, because the underlying vowels for these verbs are high. The internal *a* in these verbs could not be a result of a suffixing of a marker *a* because such suffixing would have produced at best vowel lowering, but not the insertion of *a*. One could postulate that the internal *a* results from a suffixing of *a* followed by metathesis. But this would be an ad hoc solution, as there are no attested processes of metathesis of a CV sequence in Chadic. Hence, the internal plural marker on the verb is a result of insertion into the verbal stem. Such an insertion, however, is not a productive rule in Mupun. In fact, there are very few verbs that form their plurals through the insertion of *a*. Since the internal *a* has been recorded in other Chadic languages, the few examples of plural formation through the insertion of *a* in Mupun are remnants of an old rule quite possibly operating at the level of Proto-Chadic. Having confirmed that the internal *a* plurals derive from insertion of a marker, it remains necessary to establish their source.

Given the fact that so many other segmental plural markers have cognates in the demonstrative system and the fact that there is no plural marker that does not have a cognate in the demonstrative system, I propose that the marker *a* also derives from a demonstrative. The main evidence for this hypothesis is the existence in very many Chadic languages of a third person pronoun whose distinguishing characteristic is the vowel *a*. These pronouns are independent in some languages, prefixes or suffixes in others, and in some languages they are part of a complex pronominal structure consisting of several components. In support of the proposed hypothesis, I present here some examples of languages in which *a* is both a 3rd person pronoun marker and the plural marker on the verb.

In Hausa (West), the pronoun *a* is the marker of the indefinite human subject, equivalent to 'one' and 'they' in English, *man* in German, and *on* in French. The plural interpretation of the pronoun *a* is always allowed. The vowel *a* occurs as the 3rd person subject marker in the following languages: Mandara (Central) (subject prefix); Xdi (Central);

Gidar (Central); Mina (Central); and Kera (East). Here are the examples.

In Mandara, *a* is the 3rd person singular subject marker, in non-perfective aspects (own fieldnotes):

- (89) *à-jè kré àn zàdè*
3M-hit dog INSTR stick
'He hit a dog with a stick'

- (90) *yà-j-wá-hé*
1SG-hit-EXT-EXT
'I hit it [the wall, table].'
(EXT = Extension defining the spatial characteristic of the event and possibly semantic roles of arguments)

There are some plural verbs formed through the insertion of the vowel *a*:

- (91) *àkhlá à-vhí à nǎli*
cow 3SG-sell PREP Nali
'The cow was sold by Nali.'
- (92) *àkhlá-hà tá-nwàlá*
cow-PL 3PL-sell.PL
'The cows were sold.'

The 3rd person subject marker in Gidar is *a*. Gidar also uses the vowel *a* as a partitive plural marker. Therefore, there is within the same language a cognate of the plural marker. Compare the following sentences with the verb *lb* 'buy' (own fieldnotes):

- (93) *à-lb-á-h-àk wáhlí ná vónǎli*
3M-buy-EPENTH-PERF cow GEN Vondú
'He bought a cow of Vondú.'
- (94) *à-lb-á-h-àk wáhlí-dè ná vónǎli*
3M-buy-PL-EPENTH-PERF cow-PL GEN Vondú
'He bought some of Vondú's cows.'

More important, *á* is also the 3rd person unspecified object marker:

- (95) *á-d-á 'cook it' á-dè 'cook'*
á-fá-d-á 'pay it, sweep it' áfá-dè 'pay a debt, a ticket'

With some verbs this marker became a totality marker in the sense that all of the objects are affected:

- (96) *á-sá 'drink all' á-sè 'drink'*
á-zám-á 'eat all' á-zámá 'eat'

Dghwede also has the verbal plural marker *a*. The marker *á* also serves as the 3rd person singular pronoun.

- (97) 'á xàni 'He is spending the night.'
'á xàni 'He is spending several nights.' (Frick 1978: 31)

In Xdi there is a third person singular subject marker *a* used in several constructions, including future tense and complementizers (Frajzngier & Shay 1996):

- (98) a. *tá* *d-á-ti*
IMPF GO-3SG
'He will go.'
b. *tá* *d-á-ti*
IMPF GO-1SG
'I will go.'

The vowel *a* when affixed in the verbal root encodes plurality of action or plurality of object:

- (99) *ng-á-lá*
mount-PL
'mount a horse, climb' (singular *nglá*)
(100) *x-á-ná*
cut-PL (singular *xná*)

Evidence that the plural marker encodes plurality of object is provided by the fact that the object does not have to be marked for plural if the verb is plural, marked by the insertion of *á* in the verbal stem:

- (101) *sná-n-si-ýú* *tá* *x-á-ná-t-tan* *tá* *ngúrlá* *ngwá* *há*
hear-PART-hear-1SG OBJ cut-PL-POT-3PL OBJ neck GEN COW
'I heard them slaughtering [lit. cutting the necks of] cows.'
(PART = partitive extension, obligatory with some verbs of perception)

Compare the following sentence, which lacks the verbal plural marker *á* and which is interpreted as having a singular rather than a plural object:

- (102) *sná-n-si-ýú* *tá* *sná-t-tan* *tá* *ngúrlá* *ngwá* *há*
hear-PART-hear-1SG OBJ cut-POT-3PL OBJ neck GEN COW
'I heard them slaughter [lit. cut the neck of] a cow.'

The internal plural marking is not limited to the vowel *a*, as noted in Newman (1990). In Mupun (West) the verbal plural marker, preserved in only a few verbs, is *r*, which, as Newman (1990) points out for Sura

(Mwaghavul), may be derived from an underlying /t/. In some verbs the plural is also marked by a suffix *ep* (Frajzngier 1993: 56):

- (103) Singular Plural
tép 'break' *trép* and *trép* 'break many'
gáp 'cut a piece' *gráp* 'cut pieces'
sét 'buy/sell' *srép* 'buy/sell many things'

There are a few nouns in Mupun that have the internal *r* and that are inherently plural. Like the verbal plural forms, all nominal plural nouns with internal *-r* have also final *p*, e.g. *sarép* 'women', *jitáp* 'girls', cf. *jép* 'children'. Given the fact that all plural forms involve the phonetic consonants [r] and [p], the forms may be derived through metathesis. These forms may be archaic, given their similarity to the verbal plural formation. Interestingly, Mupun has /r/ as a 3rd person singular marker in the independent pronouns *wár* '3rd masculine' and *wár* '3rd feminine'. The form *r* can be isolated in the two pronouns as encoding 3rd person and perhaps singular, while the forms *wú* and *wá* encode masculine and feminine.

Assuming that [r] derives from /t/ we can find the source of *r* in Chadic languages. In several languages in the Central branch, the third person plural marker has the form *tr*. Thus in Mina it is *tá* '3rd person plural subject in consecutive clauses' and 3rd plural object. In Gidar it is *ti* '3rd person plural component of demonstratives':

- (104) a. *á* *báik* *má-ti* [má-ti]
3M finish-PERF DEM-3PL
'He finished them.'
b. *á* *báik* *má-ni* [má-ni]
3M finish-PERF DEM-3SG
'He finished it.'

Although the many plural verbs with *a* and some with *t* or *r* provide evidence of the infixation process, it is not clear under what conditions this process emerged. Given the frequency of the formation of verbal plurals with the vowel *a* in Chadic languages, the process might have existed already at the stage of Proto-Chadic. The nearest analog for the process of infixation of *a* is the formation of various verbal forms in Semitic languages, where internal vowels represent separate morphemes, adding the categories aspect, voice, and mood to the lexical meaning of the verb represented by the consonantal skeleton. With respect to the marker *t* or its variant *r* one could propose that their occurrence within the verbal and nominal stem may be a result of metathesis of a suffix.

The important conclusion from the point of view of the present paper is that both internal plurals have corresponding cognates in the demonstrative chain. The form *a* is a marker of 3rd person in three out of four branches of Chadic, and in each branch of the three it is present in several groups. Therefore, either it can be reconstructed for the Proto-Chadic system or one can postulate that it grammaticalized independently as the 3rd person singular from some other source. The form *ʔ*, the most likely source of internal *-ʔ*, is also a member of the demonstrative chain, most often 3rd person feminine, but in many languages also the plural pronoun. In no Chadic language is the formation of internal plurals a productive rule. In every language only a handful of plural verbs are so formed. That indicates that the forms are retentions from an older stage, when morpheme insertion was still a possible rule in the language.

After the connection between demonstratives and plural markers has been established, it remains to establish the direction of grammaticalization, viz. whether the initial stage consisted of deictics that became plural markers, or plural markers that became deictics. Although the intuitive answer seems to be obvious, let us restate explicitly the argumentation for the direction of the change. Most, if not all, demonstratives can function in Chadic as heads of noun phrases. Assuming that some plural markers are grammatical morphemes, we are dealing with the issue of either free lexical items becoming grammatical morphemes or grammatical morphemes becoming free lexical items. This last process is exceedingly rare (cf. Heine & Reh 1984: 74; Heine et al. 1991; Hopper & Traugott 1993). Moreover, for a bound morpheme with a relatively narrowly defined function, such as plural marker, to become a free demonstrative, and even more narrowly, a masculine singular or even a feminine singular deictic or an anaphoric marker, would require a very idiosyncratic lexicalization process. But even assuming that such an idiosyncratic process took place in one language, postulating that the process was repeated time after time in geographically non-contiguous languages would require believing in a quasi-conspiratorial nature of linguistic change.

9. The problems of reconstruction

When reconstructing a grammatical morpheme for a group of languages, it is not enough to note the presence of potential cognates in various languages. The cognates may be retentions from a morpheme already present at the stage of the proto-language for a given group, but they may also be products of independent grammaticalization from sim-

ilar sources, a product of "convergent changes" (Schuh 1990: 616). Schuh formulates the possibility for a different class of morphemes in Chadic as follows: "Where the languages are genetically related, it is not surprising to find that not only have the same syntactic changes taken place, but also that cognate morphemes have taken similar functions" (Schuh 1990: 616). In order to decide which is the case, it is necessary to compare the cognates with the potential sources within the languages. Newman (1990) reconstructs several nominal and verbal plural markers as having been present at the Proto-Chadic stage. He does not explicitly address the issue of the categoricity of these markers, viz. whether they were inflectional morphemes, derivational morphemes, or constituents of syntactic constructions. This question merits an answer because it has bearing on the grammatical structure of the proto-language, much more than the question about what phonological forms were used to encode a particular semantic function.

Recall that nominal plural markers can be added in many Chadic languages either to the noun phrase or to the noun. If a marker is added to the head noun only, it superficially resembles the inflectional plural marker in many Indo-European languages. If it is added to the noun phrase, it is not different from other free lexical items that can expand the noun phrase. There are no known functional motivations or syntactic conditions under which the plural marker would change its morphological status from an inflectional affix into a free syntactic element, i.e., from being the marker of the head noun to being the marker of the noun phrase. The change from being a component of the noun phrase to being the marker of a noun has, however, a straightforward syntactic explanation. When a noun is the only component of the noun phrase, it is the only element to which the demonstrative can be attached. Thus it appears that nominal plural markers were not inflectional morphemes in Proto-Chadic.

Of the first three typological characteristics of number coding, only the first one (lack of coding on nouns) could be compatible with the existence of inflectional nominal plural marking in Proto-Chadic on the assumption that some languages lost those markers. The remaining typological characteristics, viz. the plural markers' being a characteristic of noun phrases rather than of the nouns and the optional use of plural markers on nouns, are incompatible with the hypothesis that the nominal plural markers were inflectional morphemes in Proto-Chadic. The three typological characteristics are, however, compatible with a hypothesis that the plural markers on nouns were not inflectional markers at the Proto-Chadic stage. At that stage, as in the contemporary languages,

they might have been "plural words" (cf. Dryer 1989) or clitics that could combine with a noun phrase.

With respect to verbal plural there appear to be two distinct stages in grammaticalization. The so-called internal plurals represent an older stage. An argument in support of this conclusion is that the internal plurals are often non-productive and have cognates in other Afroasiatic languages (cf. Greenberg 1955 with respect to nominal *a*-plurals). The remaining segmental verbal plurals are a relatively more recent product of the addition of determiners to the verb. This addition occurred after the insertion of a morpheme into the verbal stem ceased to exist as a possible process in Chadic. In both the earlier and the later morphological processes, the plural marking on the verb was drawn from the set of demonstratives, pronouns, etc.

10. Conclusions

It has been shown that the markers of nominal and verbal plural are products of grammaticalization processes of the 3rd person pronouns, deictics, anaphors, and definite markers. There is not a single segmental nominal plural marker in Chadic languages that does not have a corresponding element in the demonstrative-pronominal system. There is also no segmental plural marker in the verbal system that does not have a corresponding element among the nominal plural markers and among the deictics, pronouns, and anaphoric markers in particular languages.

The grammaticalization process can account for the typological facts involved with the nominal and verbal plural markers listed in Section 1 and summarized here: (i) Some Chadic languages have a rich system of plural markers in the nominal system, and some languages do not have any number distinction in the nominal system. (ii) The nominal plural markers in many Chadic languages are not inflectional. (iii) In some languages the nominal plural markers cannot be separated from the nouns that they mark, and in other languages plural markers are not attached to the noun but rather are constituents of the noun phrase. (iv) The unmarked form of the noun has an undetermined meaning with respect to the feature number. (v) Some languages have rich systems of coding number on verbs. (vi) In some languages there obtains identity or similarity between verbal and nominal plural markers. (vii) Plural coding on the verb has ergative characteristics.

These facts are explained in the following ways. (i) The lack of an elaborated system of inflectional coding of plurality on nouns results from the fact that such a system has not yet emerged. An alternative explanation that the lack of inflectional coding results from attrition of

an old system is rejected in the present paper. (ii) The optional coding of plurality on nouns indicates that the devices to code plurality are not inflectional morphemes. (iii) The presence of the same markers to code plurality on nouns and verbs is explained by the historical development of both devices from demonstratives that were added to both classes of words. (iv) The occurrence of plural markers with the noun or with the noun phrase is explained by the fact that the plural markers still behave as syntactic devices rather than as inflectional morphemes. Thus, in addition to the well-known origin of plural markers from collective markers and from 3rd person plural pronouns, we can say that singular demonstratives, deictics, and pronouns were a source of nominal plural markers. (v) The system of number coding on verbs emerged in two ways: coding of the plurality of action through reduplication and/or gemination or coding of definiteness of the object. (vi) Coding of the definiteness of the object was achieved through the addition of the anaphoric markers drawn from the same set from which nominal plural markers were drawn; hence the similarity between the nominal and verbal plural markers. (vii) The coding of the definiteness of the object is the primary process through which the ergative pattern of plural coding has emerged. The first step was coding of the definite object, followed by the coding of intransitive subject. In some languages the ergative pattern gave way to a nominative-accusative pattern when the number of the plural agent came to be encoded through the same means.

The typological importance of the findings in the present paper rests in their ability to explain similarities observed in languages from different families. The connection between definiteness and plurality, which has been observed in Basque, Khasi, Hawaiian, and Maung, is particularly strongly represented by Chadic languages. A cognitive explanation of this definiteness preference might be that the first nouns that receive plural marking are those that are known, have been previously mentioned, or are otherwise determined.

The similarity between nominal and verbal plural marking is explained by the fact that both types of coding derive from the same source, viz. from deictics, determiners, and anaphors.

The ergative characteristic of number coding on the verb is explained by the grammaticalization process that started with the encoding of anaphors or cataphors referring to definite objects and continued with intransitive subjects.

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Notes

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1. The Chadic family, at some 140 languages, is the largest and most diversified branch of the Afroasiatic family. Newman (1992) labels Chadic a family and Afroasiatic a phylum. Chadic languages are divided into four branches, West, Bin-Mandara, East, and Masa (Newman 1992) or three branches, West, Central, and East (Jungtraimayr 1978). Nothing in the present paper hinges on the classificatory labels of Chadic within Afroasiatic languages or on the internal division within Chadic into three rather than four branches. I will use the Jungtraimayr's term "Central" in lieu of Newman's Bin-Mandara.
2. The few plural forms in Gwandara that Carroll (1970) provides appear to be suppletive plurals used only for human nouns, e.g. *nse* 'man', *ntani* 'men'.
3. The noun *hila*, a basic-level word for a member of the bovine family, is unmarked for gender. If one were to refer to 'cow', i.e., specifically the feminine member of the pair, one would have to add a special marker indicating gender. In Chadic languages in which there is gender distinction, the basic-level word for the bovine family is inherently masculine.
4. Although I accept Schuh's (1983) reconstruction of the forms of these pronouns, I do not accept his reconstruction of their functions. More specifically, he reconstructs (1983: 158) *d* and *is* markers of definiteness. The data do not support grammaticalization of the definite at the stage of Proto-Chadic. I leave the reconstruction of various demonstratives at the Proto-Chadic stage to another paper.

5. According to Jon Ortiz d'Urbina, personal communication, in Basque the plural marker must be added to the "determined" form, which, in the absolutive and, less clearly, in the ergative, is *-a*. The "definite" determiner *-a* was originally a demonstrative, and now it is not exactly definite. In fact, it always appears on noun phrases unless there is a demonstrative or a quantifier:

Hemen liburu-a-k daude
 here book-a-pl are
 'here are (the) books'

For a recent discussion of the function of the determiner *a* that must precede the plural marker in Basque see Laka (1993).

6. Gidar's plural affix *ng-* is claimed by Newman (1990) to be a reflex of **-aki*, but there is no explanation for the voiced velar and the nasal consonant preceding it. Gidar has many intervocalic velar voiceless stops, and most important, if a sequence of [n] and [k] were to occur, it would not result in the velarization of the nasal and the voicing of the velar to give [ŋk]. Instead an epenthetic schwa would be inserted in fast speech, or a sequence [nk] could be heard:

îz-zgîâ-n-â-k
 3f-forget-3SG-3SG-PERF
 'She has forgotten.'
kê-pâmâ-g-k wâ
 2SG-hear-3SG-PERF Q
 'Have you heard?'

7. The source of the plural marker *hây/hay* may be language internal. There is in Mafá a verb *hây* 'entaser, mettre en tas en ramassant un à un' (Barreteau 1990: 172). In order for a derivation from verb to a verbal plural marker one would have to postulate the existence of serial verb constructions. Such constructions have been postulated for Chadic with respect to verbs of movement as a source of locative extensions (cf. Frajzyngier 1987b). In the absence of a grammar of Mafá, I could not ascertain whether this language has any serial verb constructions.

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